

THE AMERICAN JOURNAL OF PHARMACY.

MAY, 1888.

PHOTOXYLIN.

By GEO. M. BERINGER, PH. G.

Read at the Pharmaceutical Meeting, April 17th.

Under the name of Photoxylin, the Russian photographers use a pyroxylin made by nitrating wood pulp. Prof. Wahl, of St. Petersburg, recommends a five per cent. solution of this pyroxylin in equal parts of ether and alcohol as a substitute for collodion in surgical operations. He states that when applied to the skin it forms an impervious dressing that adheres firmly and is not easily rubbed off in washing. In small operations he has found it possible to dispense entirely with more bulky antiseptic dressings (see *Pharm. Journal and Trans.*, June, 1887, page 1051.)

The name "Photoxylin" has likewise been applied to this solution.

There being some demand for this dressing created by the publication of the statement of Dr. Wahl in the various medical and pharmaceutical journals, the writer was induced to try some experiments on the manufacture of the same.

The wood pulp desired was kindly furnished by a manufacturer both in the loose fibrous form and in the shape of sheets rolled under reduced pressure so as to leave the resulting sheets thick and porous. These samples of wood pulp were carefully dried.

Several processes of nitrating were tried with mixtures of nitric and sulphuric acids, and also with potassium nitrate and sulphuric acid. The following process, a modification of a formula used for collodion cotton, gave good results and was adopted :

Nitrous acid, 43° Baumé.....	3½ lb. av.
Sulphuric acid.....	4½ lb. av.
Potassium nitrate, granular.....	8 oz. av.
Wood pulp.....	4 oz. av.

The nitrous and sulphuric acids are mixed in an earthenware crock and allowed to stand until the temperature has fallen to 90° F., when the potassium nitrate is added and thoroughly incorporated with the acid mixture; the wood pulp is then immediately immersed in the mixture and allowed to remain for 12 hours. It is then removed from the acid and thoroughly washed. A few drops of ammonia water added to the wash water greatly facilitates the thorough washing and removal of the acid.

The nitro-cellulose thus prepared leaves little or no residue on burning and is entirely soluble in a mixture of 50 per cent. concentrated ether and 50 per cent. alcohol. Although Prof. Wahl recommends 5 per cent., I find that 3 per cent. of this pyroxylin is sufficient to make a very thick fluid, which on application leaves a very tough film. The addition of 5 drops of castor oil to the fluidounce is sufficient to render it flexible. The advantage which photoxylin possesses over collodion is the additional strength of the film.

MODIFICATION OF THE FORMULA FOR TINCTURE OF IPECAC AND OPIUM, U. S. P.

BY WM. H. CLARK, PH.G.

Some trouble having been experienced with tincture of ipecac and opium, U. S. P., from its tendency to ferment, a suggestion as to a formula that will produce a stable preparation may be found acceptable.

A sample of tincture of ipecac and opium was made strictly in accordance with the instruction of the U. S. Pharmacopœia, from material also prepared personally according to the same authority. The amount of alcohol in the finished tincture was determined, and found to be 17.75 per cent. of absolute alcohol, by weight, showing it to be weaker in alcoholic strength than both its constituent preparations. If, however, the U. S. P. formula be amended so as to use strong instead of diluted alcohol to make 100 parts of finished product, the tincture will contain over 20 per cent. of absolute alcohol by weight, and experience with large quantities, made by this method, has shown the preparation to be permanent, and satisfactory in every respect.

MADRID, N. Y., April 18, 1888.

EXTRACTUM RUBI FLUIDUM.

BY CHARLES BORN EVANS, PH.G.

From an Inaugural Essay.

Fluid extract of blackberry, as made by the formula authorized by the Pharmacopœia, is a preparation which decomposes quite rapidly, and upon standing for a short time becomes very unsightly. I have been experimenting for some time in order to ascertain, whether a menstruum could not be found that would prevent this decomposition, and yet extract the medicinal properties of the drug, and have succeeded in making some preparations which have stood very well for a month or two.

It was found impossible to prevent a slight precipitation when the reserve portion and the evaporated soft extract were brought together, but in some cases this residue was quite inert.

Six different preparations were made, using the bark in all cases in No. 60 powder.

For No. 1 the menstruum was alcohol 9 parts, water 7 parts, with 20 per cent. of glycerin. The drug was moistened, packed and macerated according to the rule specified for the making of fluid extracts. After the portion to be reserved was obtained, the drug was exhausted with a mixture of alcohol and water, in the proportion of 9 parts of alcohol to 7 parts of water.

Different menstrea were used in the other preparations, but the pharmacopœial rule of manipulation was followed for all, and in each case the menstruum remained unchanged, except that the glycerin was omitted for the percolation of the last portions of tincture. The menstruum consisted for No. 2, of alcohol 2 parts, water 1 part, and 20 per cent. of glycerin; for No. 3, alcohol 3 parts, water 1 part, with 20 per cent. of glycerin; for No. 4, alcohol 4 parts, water 1 part, with 20 per cent. of glycerin; for No. 5, alcohol 3 parts, water 1 part, glycerin, 30 per cent., and for No. 6, alcohol 4 parts, water 1 part, with 30 per cent. of glycerin.

Shortly after the liquid commenced to drop from Nos. 1 and 2, there was a slight sediment deposited upon the bottom of the bottle; and as the liquid rose in the bottle there was more or less of a deposit upon the sides, the deposit being larger in No. 1 than in No. 2. By the time the drug was exhausted, the bottles which received the weak percolates were entirely coated with a grayish deposit, while there was

a thick sediment upon the bottom. After recovering the alcohol from these weak percolates, the residue left in the still was quite large and of a mottled brown color. This improved as the liquid was evaporated upon a water-bath, and by the time it was in the condition of a soft extract, the color was almost pure black, as it should be. As soon as the reserve portion was added to the evaporated extract, the liquid assumed a brown color, and after standing 24 hours, the brown portion sank to the bottom, while the remainder of the liquid regained its original black color.

All the preparations behaved in the same manner, but in the more strongly alcoholic liquids the original color was regained more rapidly and the deposit was slight, while in Nos. 1 and 2 it occupied fully one-third of the bottle.

Nos. 3 and 4 were very much alike in their behavior. The reserve portions of both stood for several days without any deposit forming upon the sides or bottom of the bottles. There was, however, a slight deposit in the bottle which received the weak percolate from No. 3. In the case of No. 4, the weak percolate was as clear when the drug was exhausted as when the operation commenced. The residue left in the still after recovering the alcohol from Nos. 3 and 4, was quite small compared with that of Nos. 1 and 2, and was of a clear black color. As mentioned before, when the reserve portion was added to the evaporated portion, there was a precipitation, but quite small in both preparations.

The fluid extracts in Nos. 3 and 4 were allowed to stand for some time, and then filtered. The residue collected upon the filter in either case was very small. Washing it with boiling water had very little effect, except to take out the coloring matter in part. What remained was of a white waxy appearance, and soluble in strong alcohol. It was immediately precipitated from its alcoholic solution by pouring it into water. When the water was evaporated and the residue dried it was of a greenish color and entirely tasteless.

Both preparations have been standing for over a month since they were filtered, and as yet show no signs of decomposition, and by their taste one is assured that they have lost little, if any, of their astringency on account of the precipitation which took place when they were first made.

No. 5 and 6 were made of the same alcoholic strength as 3 and 4, but contained 10 per cent. more of glycerin. As far as can be seen

they are in no way different from 3 and 4. Their behavior throughout during the process of preparation was the same as that of 3 and 4, and the finished products are apparently the same, and just as likely to remain perfectly clear upon standing.

In all the preparations the menstruum used entirely exhausted the drug. In No. 1, all the coloring matter was removed; in No. 2, nearly all, while in 3, 4, 5 and 6 the liquid continued to drop colored after the drug was entirely tasteless. But the coloring matter is of little moment since astringency is what is required in this preparation.

ASPIDIUM MARGINALE, WILLDENOW.

BY CHARLES DEWALT KEEFER, PH.G.

From an Inaugural Essay.

The drug was collected in September along a hillside, facing northward, of South Mountain, Franklin County, Pa., and on being dried by artificial heat at a temperature of about 31° C., lost 64.824 per cent. Two years ago 185 rhizomes were collected and dried, the loss being 60.454 per cent.

For analysis 50 gm. of the drug reduced to No. 60 powder were used. It was exhausted with petroleum spirit, and the liquid distilled, evaporated and kept at 100° C., when the oily residue weighed 4.40 per cent. This, on exposure to 110° C., lost 0.40 volatile oil, and by treatment with hot absolute alcohol was separated into 1.0 wax and 3.0 fat, the latter dissolving in the hot alcohol, melting at 40° C., and saponifying with soda solution.

The ethereal extract consisted of 0.61 per cent. of resin and chlorophyll, was free from tannin and sugar, and like the petroleum extract, had an offensive odor and nauseous bitter taste.

The alcohol extract weighed 3 per cent., was yellowish-brown, sweetish and astringent, and was partly soluble in water. From the aqueous solution 0.60 filitanin was precipitated by lead acetate (0.54 by copper acetate), and the filtrate contained 0.2848 cane sugar, which, after boiling with hydrochloric acid, was estimated with Fehling's solution. The portion insoluble in water contained phlobaphene and a bitter principle.

Treatment with distilled water yielded a liquid from which, with

three volumes of wood alcohol, 0.24 per cent. mucilage was precipitated. The filtrate contained 2.40 dextrin, glucose and other carbohydrates.

The liquid obtained from the partly exhausted drug by treatment with 0.20 per cent. solution of caustic soda, yielded with acetic acid and wood alcohol a precipitate of 7.50 per cent. of pectin and albuminoids (ash deducted), while the filtrate still retained 6.82 per cent. organic substances dissolved from the drug.

Diluted hydrochloric acid now dissolved from the drug 0.84 per cent. calcium oxalate, 0.71 parabin and 0.80 albuminoids; and by further treatment with chlorine water, and with nitric acid with the addition of potassium chlorate, the lignin and hydrocellulose were separated, leaving 50 per cent. of the original weight of the drug, representing resistant carbohydrates including cellulose. The starch, 7.186 per cent., was determined separately from a fresh portion of the powder.

Not having separated any filicic acid in the foregoing experiments, one pound of the powdered drug was exhausted with ether, and the resulting oleoresin was exposed to cold, but the acid did not crystallize out.¹ On treating a portion of the oleoresin repeatedly with warm alcohol, a few yellowish crystals formed which, however, appeared to be prone to oxidation, and could not be retained. Attempts to separate the acid with lead acetate, ammonia, fixed alkalies or lime water, were unsuccessful. With the last named agent a filtrate was obtained which with very dilute sulphuric acid produced a pinkish precipitate, insoluble in petroleum spirit, but dissolving in ether. This solution had an acid reaction, and on evaporation left an amorphous residue, giving no reaction with ferric chloride; its solution in alcohol, on being allowed to evaporate spontaneously, developed an ethereal odor.

Oleoresin of aspidium.—Two commercial samples were obtained, one of which had an odor of acetic ether, was of a dark color and of a pilular consistency, and was found to be soluble in that menstruum, and only partly soluble in ether, petroleum spirit, alcohol and absolute alcohol. The other sample was liquid, of a greenish color, had the odor of ether, and was more freely soluble in the liquids named above.

¹Crystals having the behavior of Luck's filicic acid were obtained by Mr. Jas. L. Patterson (See AMERICAN JOURNAL OF PHARMACY, 1875, p. 293) from the oleoresin of *Aspidium marginale* by setting it aside for several weeks.—EDITOR.

CASSIA MARILANDICA, LINNÉ.

BY HERMANN J. M. SCHROETER, PH.G.

Abstract from an Inaugural Essay.

General characters.—American senna, as seen in commerce, consists of leaflets varying in length from one to two inches, and in breadth from one-quarter to one-half inch. In shape they are oval-oblong or oblong-lanceolate, entire or broken; of a pale green color, a feeble odor, and a bitterish sweet, nauseous taste, resembling that of Alexandria or East India senna somewhat. It is commonly found in the shops in the form of oblong or square cakes, which usually consist of leaflets, petioles and flowers compressed together in a compact form.

The investigation of this drug was conducted in the chemical laboratory of the Philadelphia College of Pharmacy, for the purpose of comparing its composition with that of *Cassia nictitans*, similarly examined by Mr. C. S. Gallaher. The leaves investigated were collected in this vicinity during the past month of August, and upon being air-dried, were subjected to the following analysis:

Proximate chemical analysis.—The scheme recommended by Dragendorff was used as a basis for the analysis of the drug. The drug was reduced to a number eighty powder. The moisture present was determined to be 8.90 per cent., and the inorganic constituents 6.80 per cent. The ash contained carbonic, phosphoric, hydrochloric and sulphuric acids. It yielded to water 1.4 potassium and sodium salts, and to hydrochloric acid 4.8 salts of calcium, magnesium and iron, the undissolved, 0.6, being silica.

The extract obtained with petroleum spirit (boiling point 45° C.) lost on heating to 110° C., 0.04 per cent. of volatile oil; the residue left, 3.60 per cent., was soft, fatty, dark-green in color, due to traces of chlorophyll, and fused at 59° C. Boiling absolute alcohol dissolved all but 0.1 per cent., which was regarded as caoutchouc. On cooling this solution separated out 0.30 per cent. of wax, which was white and soluble in chloroform. The fixed oil was also soluble in stronger ether and chloroform. On treatment with concentrated potash and soda solutions and heating, it would not saponify, but on dilution with water, it rapidly mixed with same. The soap obtained on the addition of sodium chloride to this mixture, was of a greenish-brown color; the mother-liquor having a reddish color.

The ether extract of 2.87 per cent. was less soft than that obtained

with petroleum ; of a dark green color, resinous and possessing the odor of the drug. Almost all of the chlorophyll was in this extract. It was soluble in chlorform and benzol, and partly so in absolute alcohol ; the melting point was 63°C . Water dissolved but 0.03 per cent., including a trace of tannin. To this aqueous solution, alkaloidal tests were applied to both alkaline and acid solutions, but with no results. Absolute alcohol dissolved 1.98 per cent., leaving a residue of 0.86 per cent.

The extract with absolute alcohol, representing 7.40 per cent., was mostly soluble in water ; the portion insoluble was weighed as phlobaphene. This aqueous solution was found to contain 0.625 per cent. of tannin, and 0.558 per cent. of glucose. The tannin was estimated by precipitation with acetate of lead, and also with acetate of copper ; both results varied only slightly, showing the presence of tannic acid alone. The solution after precipitation with lead acetate, and decomposing the excess of lead with H_2S gas, was treated with Fehling's solution, and the amount of glucose determined gravimetrically. The aqueous solution was also tested for alkaloids by agitating successively with petroleum spirit, benzol and chloroform, both in alkaline and acid solutions, but with negative results in all experiments.

The water extract, after deducting the ash (3.60 per cent.), amounted to 20.24 per cent., was of dark-brown color, and had the odor of burnt sugar. The mucilage was precipitated with two volumes of absolute alcohol, and by further concentration and precipitation with four volumes of absolute alcohol, dextrin, etc., was separated and estimated. The mucilage obtained was not all redissolved in water, showing the presence of some albumen in this extract, which was also estimated. The filtrate from the mucilage and dextrin after evaporation of the alcohol was precipitated with acetate of lead ; the precipitate, after weighing, igniting and deducting the inorganic substances, was calculated as total organic acids and allied substances. From another portion of this filtrate was estimated quantitatively the glucose from the cuprous oxide obtained in an alkaline copper solution by igniting it and multiplying by 0.45. Another portion of the filtrate was boiled with dilute hydrochloric acid, and then treated with Fehling's solution ; from the total amount of saccharoses thus estimated, that of the glucose previously found was deducted, leaving the amount of cane sugar present.

The powder was further treated in succession with caustic soda (0.2 per cent.) for determining albuminoids and extractive ; with hydro-

chloric acid (1 per cent.) for determining pararabin, etc.; with chlorine water for determining lignin; and with nitric acid and potassium chlorate for determining hydrocellulose. The remaining residue was weighed as cellulose after deduction of the ash.

The starch was estimated quantitatively from five grams of a fresh portion of the powdered drug. This was mixed with a 4 per cent. solution of caustic potash in alcohol, and heated to boiling for one day, using an upright condenser. After filtering and washing, the residue was exhausted with water to remove mucilage, etc. The remaining residue was then boiled with dilute HCl to convert the starch into glucose, which was then calculated from the cuprous oxide formed in an alkaline solution of copper; upon ignition and multiplying by 0.408, the amount of starch was obtained.

The results of the proximate chemical analysis are tabulated as follows:

Soluble in <i>petroleum spirit</i> :		
Fixed oil.....	3.200	
Volatile oil.....	.040	
Wax, soluble in chloroform300	
Insoluble residue—caoutchouc100	
		3.640
Soluble in <i>stronger ether</i> :		
Extractive soluble in H ₂ O—trace of tannin.....	.030	
Extractive soluble in alcohol (chlorophyll).....	1.980	
Insol. residue (decomposed chlorophyll)860	
		2.870
Soluble in <i>absolute alcohol</i> :		
Tannin625	
Glucose558	
Other extractive and coloring matter, soluble in H ₂ O	4.867	
Phlobaphenes, soluble in NH ₄ OH	1.350	
		7.400
Soluble in <i>distilled water</i> :		
Mucilage	7.740	
Dextrin and allied carbohydrates.....	2.760	
Albumin240	
Glucose	5.230	
Saccharose	3.245	
Organic acids and allied substances.....	.200	
Undetermined—active principle, coloring matter, etc.825	
		20.240
Soluble in <i>caustic soda solution</i> : (0.2 per cent).		
Albuminoids	3.200	
Extractive, not ppt. by acetic acid and alcohol.....	5.180	
		8.380
Soluble in <i>dilute hydrochloric acid</i> (1 per cent.):		
Pararabin960	
Starch.....	5.270	
Oxalate of calcium.....	.140	
Albuminoids and extractive matter	2.350	
		8.720

Lignin	1.820	1.820
Hydrocelluloses, etc	2.760	2.760
Cellulose	23.270	23.270
Moisture	8.900	8.900
Ash	6.800	6.800
Loss	5.200	5.200
	100.000	100.000

Other experiments.—50 grams of the powdered drug were distilled with milk of lime, the distillate tested for volatile alkaloids, but with negative results. Similarly another 50 grams were distilled with a 1 per cent. solution of sulphuric acid, but no results were obtained.

Yellow coloring matter.—A yellow coloring matter, obtained in an orange-yellow mass, was found to be present in the drug, soluble in ether and chloroform, but sparingly soluble in alcohol. It was obtained by concentrating a decoction from the powdered drug, precipitating the mucilage, etc., by alcohol, and further concentrating to a syrupy liquid, which was then agitated with several portions of ether. The ether extractions, upon evaporation, left a yellow oil, which, by treatment with cold alcohol, yielded an orange-yellow mass. In Alexandria senna, this yellow coloring matter is supposed to be chrysophanic acid; so probably in American senna, it is identical with same, or some similar body.

Active principle.—A complex body was found to be present in this drug, responding to cathartic acid, both in properties and its action. It was obtained by the following process: 250 grams of the powdered drug were digested with water at a moderate temperature, the decoction obtained concentrated to a syrup, and the mucilage, etc., precipitated with alcohol. The solution being again concentrated, and several volumes of absolute alcohol added, the crude cathartates were obtained. The albumen was precipitated from this by dissolving in water and adding a few drops of HCl. The precipitate obtained, on addition of more HCl, was treated with hot 60 per cent. alcohol. From this solution the purified cathartic acid was obtained by precipitation with ether. The active principle so obtained is insoluble in water, absolute alcohol, chloroform, and ether, soluble in warm diluted alcohol, is of a brownish-black color, amorphous, soluble in alkalis with dark-brown color, and reprecipitated by acids. Tannin, antimonial salts, yellow and red prussiates, have no effect upon it. Color tests, with strong acids, were following: With H_2SO_4 , green brown: H_2SO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$, greenish black; with HNO_3 and HCl, no change.

Physiological action.—The medicinal properties of the drug were experimented with fully. The ethereal and alcoholic extracts were taken internally, representing in each case up to 20 gm. of the drug; the latter produced some griping effects, but neither cathartic results. An aqueous infusion produced cathartic effects, but in half times larger dose than the officinal senna. The active principle obtained from the drug was also taken, producing decided cathartic effects.

In conclusion, the writer would state as his belief, that American senna does contain an active principle, which responds to the cathartic acid of Alexandria senna in all respects, existing in the former drug only in smaller quantity.

GLEANINGS IN MATERIA MEDICA.

BY THE EDITOR.

Scopolia japonica.—Martin stated in 1878 that Japanese belladonna root contains solanine, but does not yield atropine. In 1880 Langgaard announced the presence of two alkaloids resembling atropine in physiological action, and which were designated as scopoleine and rotoine. Eykman, in 1883, regarded scopoleine as probably identical with one of the alkaloids of the atropine group, and isolated the glucoside scopolin and its derivative scopoletin. E. Schmidt and H. Henschke have recently examined the alkaloids (*Archiv d. Phar.*, March, 1888, p. 185–202) which were with difficulty separated by fractional precipitation with gold chloride into atropine, hyoscyamine and hyoscyne, the mother liquor containing tropine; choline was likewise isolated from the extract. The three mydriatic alkaloids are present in the commercial root in very variable proportion, and in some of the samples hyoscyne was wanting. Commercial scopoleine was ascertained to consist of the same alkaloids varying in proportion and not entirely soluble in ether.

Henschke (*Archiv*, 1888, p. 203–211) has also isolated the fluorescent compound scopoletin which is soluble in alcohol, ether, chloroform, acetic acid and in boiling water. The aqueous and alcoholic solutions show a quinine-blue fluorescence, changing to bright blue-green on the addition of alkalis. Scopoletin melts at 199°C. and is identical with the chrysotropic acid of Kunz. The aqueous solutions of both compounds are colored black-green by strong nitric acid; by gold chloride

cobalt-blue, followed by reduction; by ferric chloride green, gradually forming a dingy-green precipitate; by potassium permanganate dark-green with blue fluorescence, changing on the further addition of a little sulphuric acid to indigo-blue. These compounds have a composition very similar to that of methyl-æsculetin; but the latter prepared from æsculetin melts at 184° and is not colored green by ferric chloride. Henschke did not succeed in obtaining from the extract a notable quantity of scopolin; but by boiling the extract with acid the yield of scopoletin was increased to 0.156 per cent.

Commercial rotoine (*Archiv*, 1888, p. 211-214) was ascertained by Henschke to be not Langgaard's alkaloid, but simply the soda soap of the fat contained in the Japanese scopolia root.

Scopolia Hardnaekiana.—The cultivated root, collected in May, contains an alkaloid which according to Ernst Schmidt (*Archiv*, 1888, p. 215) is identical with hyoscyamine; a fluorescent compound, possibly scopoletin, was likewise present. Atropine and hyoscyne could not be isolated from the gold double salt.

Asarum europæum, Linné.—The volatile oil has been examined by A. S. F. Petersen. It contains a terpene $C_{10}H_{16}$ boiling between 162° and 165° C., and in its properties agreeing with the pinene of Wallach. The principal constituent is an oil, boiling between 247° and 250° , having the empirical formula $C_{11}H_{14}O_2$ and being identical with the methyl-ether of eugenol, which has hitherto not been observed in plants, but has been repeatedly prepared synthetically; by oxidation with potassium permanganate it yields dimethyl-protocatechuic acid, and, on treatment with hydriodic acid, methyl-iodide is produced. Near 300° a green or blue oil is obtained; the green fractions contain a considerable quantity of the stearopten asaron (boiling point 296°), the presence of which materially interferes with the investigation of the higher boiling portion.

In the volatile oil of *Asarum canadense* Petersen found the same terpene, and the oil boiling between 245° and 250° , which is probably identical with the asarin of Power; a blue oil with a high boiling-point is likewise present, and compound ethers particularly of acetic acid, which are absent from the European oil. The American oil does not contain asaron.—*Archiv d. Phar.*, Feb., 1888, p. 89-123.

Composition of Mastich.—Prof. E. Reichardt reports (*Archiv d. Phar.* 1888, p. 154-163) the results of investigations undertaken by Klemm with recently obtained clear and with old dusty mastich. The specific

gravity of the former was 1.068, and of the latter 1.072. Benzol dissolved from old mastich 66 per cent. and from the recent article 90 per cent.; the elementary analyses of these portions render it likely that they consist mainly of $C_{10}H_{16}O$ mixed with $C_{10}H_{16}O_2$ in variable proportions, depending upon age and exposure. The portion, insoluble in benzol contains less carbon, and as obtained from recent mastich, agrees with the formula $C_{10}H_{15}O_3$, and that from old mastich, with $C_{10}H_{15}O_4$. On dry distillation old mastich only yielded a distillate of a very slight acid reaction; the tar commenced to boil at 75° , and yielded a colorless fraction, boiling at 108° , a yellow portion boiling at 220° , and a dark green oil, boiling at 350° . All contained oxygen and possessed an odor recalling that of thyme, lavender or rosemary.

Lupinus albus, Lin.—Campani and Grimaldi isolated from the seeds *vanillin*, and proved its identity by the crystalline form and by its chemical properties.—Chem. Repert. 1888, p. 76.

Anagyris fetida, Lin.—The seeds yielded to Nicola Reale, with ether, a fixed oil, resin, resinous anagyric acid, and a lemon-yellow substance, probably a glucoside. Alcohol extracted yellow coloring matter, glucose, sugar and an alkaloid, anagyrene, $C_{11}H_{24}NO_8$, which is amorphous, deliquescent and bitter.—Chem. Repert., 1888, p. 77.

ABSTRACTS FROM THE FRENCH JOURNALS.

Translated for the AMERICAN JOURNAL OF PHARMACY.

MIXED STROPHANTHUS SEEDS AND THEIR INSECT. Mr. Catillon recently told the *Société de Thérap.*; (*Prog. Méd.*, March 31, 1888), that a package of seeds received by him from the Niger contained several varieties, and that these were usually sold together under the name of *S. hispidus*. The mixed seeds contained $7\frac{1}{2}$ per cent. of amorphous strophanthin, a yellow oil and 13 per cent. of extractive. The epicarp contained only a very minute quantity of strophanthin. An insect and its larva lived in the interior of the seeds without apparent inconvenience. [It has been sometimes stated that the effect of strophanthus as an arrow poison is heightened by its expression whilst the living insects are within the seeds. Trans.]

ERYTHROPHLEINE. Prof. Panas in a communication to the *Académie de Médecine* March 6, 1888, (*Prog. Méd.* March 10), stated that as a local anæsthetic in ophthalmology its action was more prolonged but less complete than with chloral, while the inflammation and pain which attends its use renders it unsuitable for all eye operations; durable anæsthesia is obtained with chloral by repeating the instillations.

ASSAY OF COCA LEAVES. In the *Jour. de méd. de Bruxelles*, Mr. Koehler describes his method as follows: Mix 50 gm. of finely pulverized leaves with 5 gm. of dry carbonate of sodium and 15 gm. of oxide of lead; macerate with 50 gm. of water and dry *in vacuo* in a large vessel at the temperature of the water bath. The dried mass is agitated with 250 gm. of benzin in a large flask; in twenty-four hours filter and recommence the process with an equal quantity of the solvent. The benzin extracts are then placed in a receiver and reduced in partial vacuum to 200 gm.; the temperature of the bath should not exceed 30° to 40° [86° to 104° Fah.]. The extractive is then briskly agitated with 100 gm. of 1 to 100 HCl in water. After frequent agitation for an hour, decant and wash the benzin extract again with 50 ccm. of acidulated water as before. The cocaine is entirely dissolved by the acidulated water. To free from the coloring extractive wash the hydrochloric liquor two or three times with 20 ccm. of ether. The alkaloid is displaced by an excess of carbonate of sodium and extracted with 20 gm. of ether; after a brisk agitation the ether is decanted, and replaced by a new supply, etc. The cocaine passes wholly into the ethereal extracts. These are evaporated into the free air and the alkaloid separates, partly in long fine needles and partly in thick crusts of blended crystals. These are dried *in vacuo* over sulphuric acid and weighed. *Répert. de Pharm.* March, 1888. [See also *AM. JOUR. PHARM.*, 1888, pg. 199.]

OIL OF SESAME AND OLIVE OIL. In operating upon fat acids, says Mr. Ernest Milliau (*Moniteur Sci.*), we have been able to obtain all necessary exactitude by using the saccharated hydrochloric acid process. In acting directly on the oil we may obtain rose colorations from perfectly pure olive oil. The appearance of this tint, which has given rise to so many disputes, arises from the coloring matter in the aqueous part of the oil. In treating this part with HCl (sacch.) we obtain a rose or red coloration recalling exactly that of sesame. So,

new olive oils—however pure—may sometimes give a red color. In taking care to expel the water from the fat acids, at a heat of 110° [230° F.] and pouring them into a test tube upon an equal quantity of HCl (sacch.), the rose color is produced, whatever proportion of sesame may be present in the olive oil. But if the latter be pure, the HCl (sacch.) remains absolutely colorless. *L'Union Pharm.*, March, 1888.

INNOXIOUSNESS OF BORACIC ACID. Dr. Gaucher concludes from experiments upon animals that man would have to take 75 gm. in twenty-four hours to get its toxic effects. To several tuberculous patients he gave quantities equal to 1 gm. daily. After a few days of treatment the fetidity of the sputa disappeared, and in two cases the general condition was ameliorated. He found it beneficial in cystitis; it produced no gastric irritation. *Soc. méd. des hôpitaux; Répert. de Pharm.*, March, 1888.

GUAIACOL is recommended by Sahli (*J. de phar. d'Alc-Lorr.*, January, 1888), as a substitute for creasote, owing to the uncertainty as to the purity of the latter. For its internal administration he proposes the following formula: Guaiacol, 2 gm.; alcohol, 20 gm.; water, 180 gm.; dose, from a teaspoonful to a tablespoonful two or three times a day, after eating. The mixture should be kept in black glass.

SOZOIODOL is described as a derivative of the aromatic series having the constitution of a phenol whose atoms of hydrogen are replaced by the radical (SO_3H) and an atom of iodine. It takes the form of a brilliant crystalline powder, is inodorous and dissolves sparingly in cold water and in cold alcohol. It holds 42 per cent. of iodine and is said to be equally efficacious with iodoform and salicylic acid in dermatoses. It appears to owe its only advantages to its absence of odor. *L'Union Pharm.* February, 1888.

ANTHRAROBIN, discovered by Liebermann (Berlin Medical Society) is less toxic than chrysarobin, for which several German physicians wish to substitute it. Rabbits absorb 1 gm. without inconvenience. It is eliminated by the kidneys, after changes not yet studied. Doctors who use it make topical applications (in the form of unguents) against psoriasis, herpes, pityriasis, etc., or employ it in 10 to 100 alcoholic solutions, which are preferable. The ointments consist of 10 or 20 to 100. Its efficaciousness is heightened with soap and water after

the inunctions. Applied to the scalp it turns the hair red. *Bull. Méd.; Arch. de Phar.*, April 5, 1888.

PHENACETINE OR PARAACETPHENETIDINE. Prof. Kast, of Freiburg, (confirmed by Prof. Bamberger, of Vienna), finds that in doses of 50 to 70 cgm. it lowers the temperature in man by 2 or $2\frac{1}{2}$ degrees. These writers say that it does not cause vomiting, cyanosis, collapsus or diuresis, and has no action upon the circulatory system.—*Arch. de Phar.*, February, 1888.

ANTIPYRINE: ITS INDICATIONS AND ITS DANGERS. At the *Société de Thérapeutique*, Feb. 22, 1888, Dr. Huchard said (*Prog. Méd.*, March 31, 1888), that in certain affections, such as typhoid fever where the kidneys serve as emunctories care must be used in giving antipyrine. On the other hand, he had given 8 gm. daily to a woman with meningo-myelitis, thus reducing the amount of urine from 24 and 28 litres in 24 hours, to 5 litres. Dr. Huchard also said that the drug should not be given in arterio-sclerosis even when the kidneys are not involved. Dr. Dujardin-Beaumetz agreed with Dr. Huchard, and said that antipyrine must not be given when the kidneys were affected, as it might become locked up in the system and cause toxic accidents. [See *Am. Jour. Phar.*, 1888, p. 180].

VANILLIC PHLOROGLUCIN, GUNZBURG'S REAGENT. This is the mixture lately adopted by Prof. Germain Sée in his researches upon the chemistry of the gastric juice, and especially upon the amount of hydrochloric acid contained in the stomach in its pathological as compared with its normal condition. In the *J. de Phar. et de Chim.*, April 1, 1888, Mr. E. Bourquelot describes the reagent as follows: To prepare it, dissolve 2 gm. of phloroglucin (isomeric with pyrogallie acid), and 1 gm. of vanillin (aldehyd of methyl-protocatechuic acid) in 30 gm. of absolute alcohol, thus obtaining a yellowish red solution. This, added to hydrochloric or other mineral acid gives a bright red reaction. When these acids are greatly diluted, as in the liquid from an impoverished stomach, the action does not take place and then a few drops of the stomachal liquid and an equal quantity of the reagent are heated in a small porcelain dish in the water bath. If HCl be present a red color shows at the sides of the capsule and increases in extent as the liquid evaporates. The action is clear with liquids containing one per cent. of the acid, and becomes brighter in proportion to the amount present.

PRACTICAL NOTES FROM FOREIGN JOURNALS.

BY THE EDITOR.

Saccharated ferric oxide.—Experiments made by W. Stromeyer, lead to the conclusions, 1, that ferric hydroxide dissolves in sugar solution in small quantity, varying somewhat with the conditions of the process; 2, that the solubility of ferric hydroxide is increased with the increase of the quantity of sugar in the aqueous solution; and, 3, that the solubility of ferric hydroxide in sugar solution is augmented by the addition of caustic potassa.

Further experiments made by Ernst Schmidt, showed that the brown granular precipitate produced by boiling water in the solution of a ferric salt, containing sugar and rendered alkaline by caustic soda, may be almost absolutely freed from sodium, but not from sugar, by washing with boiling water; and with hydrochloric acid yields a brown red solution, passing gradually into the yellowish brown of ferric chloride.

Prepared according to Hornemann's method (ferric chloride, syrup, and caustic soda, sufficient to redissolve the precipitate, then boiled), the ferric oxide varied between 62 and 71 per cent., and the Na_2O present between 0.07 and 1.11 per cent. Only two of the four products, containing about 65 per cent. Fe_2O_3 were soluble in water; in one of the insoluble products (71 per cent. Fe_2O_3), the molecular proportion of ferric hydrate to sugar was approximately as 30 : 1.

Prepared according to the German pharmacopœia the molecular proportion was nearly as 16 : 1, in the water soluble products, containing about 68 per cent. Fe_2O_3 and from 0.5 to 2.08 per cent. Na_2O ; in one or two of these the addition of a little alkali, besides sugar was necessary to effect complete solution, and the same was the case with a product containing 75.8 Fe_2O_3 and 0.3 Na_2O , which became soluble in the presence of sugar after the proportion of Fe_2O_3 to Na_2O had been changed to 68 : 0.6.

It is thus shown that ferric saccharates, suitably mixed with sugar, must contain a certain amount of alkali, possibly as sodium saccharate, in order to yield clear solutions with water; the amount of Na_2O necessary for this purpose, is rather less than 1 per cent. of the Fe_2O_3 present. The chemical reactions, when following the process of the *Phar. Ger.*, may be explained thus: sodium carbonate precipitates from ferric solutions, ferric hydrate containing soda, which with NaO and sugar forms a water soluble ferric saccharate; boiling water precipitates from the solution ferric saccharate of variable composition

and soluble in water ; if by washing with water the amount of NaO has not been decreased to less than about 1 NaO for 100 Fe_2O_3 , then on the addition of sugar and drying, a water soluble ferric saccharate with excess of sugar is obtained.—*Archiv d. Phar.*, February 1888, p. 137–154.

Pure glacial phosphoric acid may be obtained from sodium pyrophosphate by treating it with fuming hydrochloric acid, spec. grav. 1.190, filtering through platinum sponge from the sodium chloride, removing arsenic by means of sulphuretted hydrogen, and evaporating in a platinum vessel. Sodium chloride is almost insoluble in hydrochloric acid of the above strength ; a weaker acid will not remove the soda.—*Zeitsch. f. anal. Chem.*, 1888, p. 24.

Salicylate of mercury is said to be prepared by precipitating mercuric nitrate with alkali salicylate, washing with water and diluted alcohol, and drying in the shade. B. Fischer describes it (*Phar. Ztg.*, 1888, p. 146), as a white inodorous and tasteless powder of neutral reaction, very sparingly soluble in water or alcohol, but soluble in solution of table salt. It is not decomposed by acetic, tartaric, lactic or carbonic acid, but mineral acids liberate salicylic acid. It contains 59 per cent. of hydrogen, and its formula is $\text{C}_6\text{H}_4\text{CO}_2\text{OHg}$. Its complete solubility in caustic soda solution may serve as a test for its purity. A solution for dispensing may be prepared by triturating 10 gm. of the salt with 15 or 20 gm. of sodium chloride dissolved in water, adding about 150 gm. water, heating in a water bath until solution is effected, and diluting with 2500 cc. hot water.

Magnesium salicylate has been recommended by Huchard in abdominal typhus as preferable to bismuth salicylate. According to B. Fischer (*Phar. Ztg.*, 1888, p. 146), the salt is prepared by dissolving salicylic acid in boiling water, saturating the solution with magnesium carbonate, filtering and crystallizing. It forms long, colorless needles, is readily soluble in water and alcohol and has a somewhat bitter taste. When given in large doses of 3 to 6 gm. daily it causes no unpleasant effects.

Impure potassium iodide, containing sulphite, has been met with in commerce by C. Daudt (*Phar. Ztg.*, 1888, p. 117). The sample responded to the pharmacopœial tests for iodate, nitrate, chloride and thiosulphate ; but the hydrogen gas evolved on testing for nitrate with zinc and hydrochloric acid, produced a black color on lead paper, due to the presence of sulphite, soluble sulphides being absent.

Liparin which has been recommended as a substitute for cod liver oil, is prepared by partial saponification of pure olive oil, and separating the excess of oil together with the liberated oleic acid. It is an oily liquid, closely resembling olive oil, contains 5 to 6 per cent. of free fat acids (oleic), and readily forms a milk white emulsion, when agitated with an equal bulk of water containing a little soda. The amount of free acid is readily determined by dissolving 2 gm. liparin in 20 cc. ether, adding 10 cc. alcohol and a few drops of phenol phthalein, and titrating with normal alkali. *Phar. Zeitung*, 1888, p. 102.

The properties of different kinds of malt have been studied by T. Morawski and M. Glaeser (*Chem. Repert.*, March 4, 1888, p. 58), with the following results: 1. Rye malt has a much greater saccharating power than oat malt. 2. Wheat malt is of the same, if not of greater, value as rye malt. 3. The saccharating power of rye and wheat malt is but little inferior to that of barley malt, and in several instances was found to be of the same value. 4. Oat malt is inferior in saccharating power to malt from the other grains. 5. Maize malt, made at the ordinary temperature, is inferior to oat malt; if prepared at 30°C., and until the germ has twice or thrice the length of the corn, the saccharifying power is materially enhanced, and becomes equal to that of oat malt.

A color-changing varnish, patented in Europe, consists of a solution of platino-magnesium cyanide, to which gelatin, gum, or similar fixing material, has been added. The articles coated or impregnated with this solution, after drying by a moderate heat, retain their original color until exposed to moist atmosphere, when a rose or red color, modified by the natural color of the article, makes its appearance, and remains permanent, until exposed to heat.—*Chem. Ztg.*, 1888, p. 319.

Chloride of Methyl, according to Dr. Bailly (*Prog. Méd.*), may sometimes be used to great advantage by receiving the spray upon a tampon of non-absorbent cotton. This material holds and preserves the refrigerant activity of the medicament so that it exerts its power with great regularity and constancy.

Borate of Ammonium in Phthisis.—Professor Lashkevich attaches a great deal of importance to this salt as a remedy in the treatment of phthisis. It diminishes the expectoration, and very frequently cuts short the fever in the first stages of the disease. The dose is about 25 centigrams, given three times a day with the addition of codeine or some other sedative.—*Weekly Med. Rev.*

GLEANINGS FROM THE GERMAN JOURNALS.

BY JOHN A. MARTIN, PH. G.

Sulphobenzoate of Sodium recommended as an antiseptic dressing for wounds, is prepared by dissolving benzoic acid in a concentrated solution of sulphite of sodium. The compound is very soluble in water, and is an antiseptic worthy of notice on account of its entirely non-poisonous and odorless character. A four per cent. or five per cent. solution in water used as a lotion or dressing for wounds acts not only as a disinfectant, but also hastens granulation.—*Rundschau, Prag*, 1888, p. 13.

Test for the Purity of Cocaine.—Dissolve 1 gm. of hydrochlorate of cocaine in 5 gm. of water and add to the clear solution 3 drops of diluted sulphuric acid, (*Phar. Ger. II.*) Now add 1 drop of a one per cent. solution of permanganate of potassium. The violet color of the solution must remain plainly visible for half an hour; an impure cocaine salt will at once decolorize one or more drops of the permanganate solution. It is necessary to have the vessel in which the test is made well covered, to protect the solution from dust.—C. F. Böhrringer, in *Pharm. Post*, 1888, p. 136.

Guarana.—To ascertain the amount of caffeine in guarana, A. Kremel recommends the following method: Digest 10 gm. of powdered guarana with 100 gm. of 25 per cent. alcohol, in a tared flask on a water bath, for 1 or 2 hours. After cooling replace the loss of weight with 25 per cent. alcohol, thoroughly shake the mixture, and filter off 50 grams. Add a sufficient quantity of slaked lime to the filtrate, and evaporate to dryness in a porcelain capsule. The residue is reduced to fine powder and extracted with chloroform. Upon evaporating the chloroform solution the caffeine is obtained in absolutely colorless crystals. The crystals are dried at 100° C. and weighed. By this method guarana of commerce yields from 3.12 to 3.80 per cent. of pure caffeine.—*Pharm. Post*, 1888, page 101.

Adulteration of Cod-liver Oil.—Professor Poel of St. Petersburg reports an adulteration of cod-liver oil with 50 per cent. of mineral oil, and although it contained this large amount of mineral oil suspicion was not aroused by the appearance or taste. The stools of patients had the odor of petroleum, and this led to the discovery.—*Wratch; Pharm. Post*, 1888, page 37.

Santonin Lozenges.—A correspondent to *Journ. de Pharm. d'Anvers*, made an examination of several samples of santonin lozenges, obtained principally from the lozenge manufacturers of Belgium. The process

is a very simple one: 10 lozenges are reduced to a fine powder and digested with chloroform in a small flask for half an hour. The chloroform solution is then filtered, the residue upon the filter washed two or three times with chloroform, and the solutions evaporated with the aid of a gentle heat. The santonin remains in a pure crystalline state. According to the Codex each lozenge should contain 25 milligrams of santonin, but the examination showed that not one of the samples contained more than 10 milligrams in each lozenge.—*Pharm. Post*, 1888, page 27.

Pasta Mack is a new toilet preparation which dissolves in water with evolution of carbonic acid gas, and is said to produce an agreeable and refreshing effect upon the skin. According to Eckstein in *Berl. Pharm. Ztg.*, it is composed of a mixture of 27 parts rice starch and 73 parts effervescing powder, (bicarbonate of sodium 10, tartaric acid 9), suitably perfumed and formed into small tablets. The perfume imparted to the water is strong and agreeable and remains upon the skin long after washing.—*Rundschau, Prag*, 1888, p. 12.

Listerin.—The antiseptic solution used in England and America under this name, according to "Fortschritt," has the following composition:

Acid benzoic,.....	8.0 gm.
Borax,.....	8.0 gm.
Acid boric,.....	16.0 gm.
Thymol,.....	2.4 gm.
Eucalyptol,.....	10 drops.
Oil gaultheria,.....	10 drops.
Oil Ment. pip.	6 drops.
Oil Thyme,.....	2 drops.
Spt. Vin. rect.....	180.0 gm.
Aqua sufficient for.....	1000.0 gm.

Russian Chilblain Ointment.—Beef marrow 40 parts, hydrochloric acid 30 parts, marshmallow ointment 120 parts, extract of opium 2.5 parts, camphor 10 parts, and Venice turpentine 25 parts.—*Phar. Centrallh.* 1888 p. 12.

Flashpowder, (Blitzpulver) used in photography for taking instantaneous pictures, is made by mixing together coarsely crushed sugar 1 part, magnesium, in powder, 1 part, chlorate of potassium, 2 parts. This powder, according to Harvey, in *Pharm Ztg.*, is one of the best for this purpose, but care must be taken that the sugar is not in fine powder, as otherwise the explosions will be too violent. In

another formula Borlinette recommends equal parts picric acid and chlorate of potassium. This is cheaper than the first, but it is more dangerous and must be used with care.—*Rundschau, Prag*, 1888, p. 91.

To file glass vessels.—Bornträger in *Rep. anal. Chem.*, recommends to first lay the file in a strong soda lye and while yet wet to dip it into coarse sand. A file treated in this way can be used for filing glass ware, without the least danger of cracking it.—*Rundschau, Prag*, 1888, p. 91.

Liquid glue, possessing great resisting power, and particularly recommended for wood and iron, is prepared according to Hesz as follows: Clear gelatin, 100 parts; cabinet-maker's glue, 100 parts; alcohol, 25 parts, and alum, 2 parts; the whole mixed with a 20 per cent. acetic acid, and heated on a water-bath for six hours. An ordinary liquid glue, also well adapted for wood and iron, is made by boiling together for several hours 100 parts glue, 260 parts water, and 16 parts of nitric acid.—*Rundschau, Prag*, 1888, p. 74.

Iodine Pastilles, for disinfecting the sick room, are prepared by incorporating iodine and salicylic acid with paraffin or wax, or similar material. In burning the pastilles, the salicylic acid is converted into phenol, and this is volatilized with the iodine.—*Rundschau*, 1888, p. 50.

A general antidote for poisons is a mixture composed of equal parts of calcined magnesia, wood charcoal, and hydrated oxide of iron, with a sufficient quantity of water. It is, as a harmless and simple remedy, applicable in such cases when the nature of the poison is unknown.—*Rundschau*, 1888, p. 15.

As an antidote for iodoform, Behring recommends a 20 per cent. solution of bicarbonate of sodium.—*Rundschau*, 1888, p. 15.

Corrosive sublimate in external applications.—Recently in a report before the Medical Society of Berlin, Professor Virchow called attention to several cases of corrosive sublimate poisoning; he had already in November reported several cases in "Charité." Patients who had used for disinfecting purposes external applications of corrosive sublimate suffered serious derangement of the intestines from which they died. The real cause of death was ascertained only after making chemical examinations of the affected organs, which revealed the presence of mercury, and this could only be traced to the corrosive sublimate which had been used externally. Since the foregoing, Professor Virchow observed three more cases of fatal poisoning from corrosive sublimate.—*Ap. Ztg.*, 1888, page 13.

JOTTINGS FROM A NOTE BOOK.*

BY JOS. F. BURNETT, F. C. S.

Pharmaceutical Chemist.

Sugar as an Alkaloid Reagent.—I have recently had my attention directed to sugar as an alkaloid reagent and have tried a number of experiments to show how useful it is. With codeine, morphine, and veratrine the reactions with sugar and sulphuric acid are highly characteristic. Apply the test thus: Mix a trace of the alkaloid with about an equal quantity of powdered cane sugar upon a white plate, and then drop on a drop or two of strong sulphuric acid by means of a glass rod. Morphine turns light pink; codeine a deeper pink; veratrine becomes dark red, then in a few moments green, changing again to a rich dark blue. With aconitine the behavior is peculiar. It develops an orange color, after a time becoming pink in the case of exotic aconitines; but with crystallized English samples the result is such that no dependence can be placed upon it. Negative results were obtained with the following alkaloids: Quinine, quinidine, cinchonine, cinchonidine, caffeine, berberine, physostigmine, strychnine, cocaine, pilocarpine, atropine, apomorphine, brucine, and cupreine.

Bismuth with Mucilage.—A recent writer in the *Pharmaceutical Journal* in some dispensing notes lays down as an axiom, that when bismuth is ordered in a mixture mucilage must be added by the dispenser to suspend it. To this I cannot but take exception, for the following reasons: A mixture containing bismuth and tragacanth was made in some quantity by myself last summer, and however carefully made or however elegant its appearance when made, in the course of a few days the bismuth had set at the bottom of the bottle, and no amount of shaking would again diffuse it. In fact, one might as well turn a few feet of cord into a bottle full of water and attempt to diffuse that. When tried with mucilage of acacia the result was not one bit more satisfactory. I would therefore maintain that a bismuth mixture is much the better in the long run without gum at all, and no medical man who foresaw such a result as I have laid before you would be likely to order it. Is, then, the dispenser justified in spoiling a mixture which has to be kept a week simply for the sake of the appearance it may bear for the first day? If a suspender be desired, I can

*Read before the Chemists' Assistants' Association, March 29, reprinted from *Phar. Jour. and Trans.*, April 7, 1888, p. 854.

give glycerin my unqualified approval, for I have used and am using any amount for this purpose, and I always find it all that can be desired. Of course, I do not suggest the addition of glycerin where the practitioner has not prescribed it, for I would dispense his mixture as written.

Laburnum Poisoning.—It may be interesting to chronicle a case I met with last autumn while making some house-to-house calls in one of the poorer localities of Oxford. Two or three children were lying about the room sick with headaches, pains in the stomach, and drowsiness. The mother had elicited from the elder that they had eaten some seeds which they had picked up in a neighbor's garden. I asked to see some of the seeds, and a withered branch of what I at once knew to be laburnum was brought to me, with plenty of fruit upon it. As far as could be made out from the tales of the children, they had swallowed some five or six seeds each. The mother had had the good sense to encourage the sickness with mustard, and afterwards gave strong stimulants in the shape of tea and coffee, and in two or three days the children were well again. I only mention this hoping that by it the poisonous property of that common ornamental shrub may be the more widely spread, and thus parents be put upon their guard. In this instance the woman had not the slightest previous knowledge that laburnum was poison.

Chloroform as a Preservative.—Anyone who has to get through a large amount of dispensing in a short time has his ingenuity put to work to devise every means he can to expedite his work. One of the first and most natural ideas is to keep every drug or chemical (which is likely to be required) in solution. I now keep large numbers of dispensing solutions, in fact many more than ever I previously did. Then crops up the difficulty that many soon spoil, ferment, develop fungoid growths, etc., etc. Where such is the case I use chloroform water, B.P., for the solvent and in not a single instance have I found it fail to keep the solution perfectly. I may note in passing that I have the permission of the medical staff to use any such device as this, for the dose of chloroform introduced into a mixture by adding *e.g.*, 80 minims of a 1 in 10 solution of quinine is neither here nor there. I have by me quantities of pulv. rhei rubbed down with aq. chlorof., likewise pulv. cret. aromat., solutions of quinine, fer. am. cit., pot. acet., pot. citr., and a host of others, some of which are some months old, and are as good as the day they were made. A couple of drachms of chloro-

form will keep for a fortnight as much as three gallons of fresh infusion of gentian. Infusions of calumba or buchu made four times the strength of the B.P. (*i. e.*, conc. 1 to 3) keep perfectly when one drachm of chloroform to the quart is dissolved in them. With infusion of buchu I consider this a distinct advance on using spirit (which the 1 to 7 preparation of the wholesale houses contains), for the chloroform does not throw down any mucilaginous constituent. These are but a few examples of the use of chloroform as a preservative.

Salicylic Acid.—It will be remembered that I have previously published some work on this subject, wherein I stated that the artificial acid reduced a dilute solution of potassium permanganate much more rapidly than that obtained from wintergreen. In the discussion that ensued, it was hinted that my experiments were incomplete, because I had not tried Schering's dialyzed acid in this way, and this must be my apology for raising the ghost again. I promised at that time to experiment and let the Association know the result; but I have never yet done so. Allow me now to say that Schering's acid differs but little from Kolbe's in its reducing action upon permanganate, as the following experiments show:

Four samples of the acid as follows:

- a.* Natural acid.
- β.* Schering's dialyzed acid. .
- γ.* Kolbe's acid.
- δ.* An artificial acid of unknown source.

Three grains of each were mixed with two drachms of distilled water and ten minims of B.P. liq. pot. permang. added to each. At the end of fifteen minutes *β*, *γ*, and *δ*, were ever so many shades lighter than *a*, and at the end of an hour the difference was extremely well marked. After an hour and a half *a*, on being gently agitated, was of a dark olive brown color; *β*, *γ*, and *δ* were of a light brownish-green *γ* and *δ* being identical, and *β* only just the least shade darker.

This result is quite independent of anything I have previously published, and it does but confirm the opinion I have previously expressed that there is no synthesized acid in the market which is chemically identical with the natural.

Phthalate of Morphine, according to Bombelon is a highly serviceable salt of morphine, soluble in 5 parts of water, and causing no irritation when injected subcutaneously. It is obtained by evaporation and scaling, not by crystallization, and care is necessary in its preparation.

ACTION OF WATER ON LEAD.*

BY M. MÜLLER.

A sample of water from the Ocker was distilled. The amounts of dissolved gases and of ammonia were determined in the first, middle, and last fractions, and the behavior of the different fractions with lead observed. The water before distillation contained 0.00015 per cent. of ammonia.

	First fraction.	Middle fraction.	Last fraction.
Ammonia,	0.00115 p. c.	0.0001 p. c.	0.00008 p. c.

Dissolved gases reduced to 0° and 760 mm. pressure.

Total volume,	2.04 vol. p. c.	1.196 vol. p. c.	0.77 vol. p. c.
Carbonic anhydride,	1.159 "	0.178 "	0.025 "
Oxygen,	0.269 "	0.316 "	0.232 "
Nitrogen (diff.)	0.612 "	0.702 "	0.513 "

The first fraction scarcely attacked polished strips of pure lead, which became slowly covered with a thin deposit. The water remained perfectly clear. The middle and last fractions acted very energetically, the lead was rapidly corroded, and the water became turbid. In order to ascertain whether the protecting influence of the first fraction was due to the ammonia or the carbonic anhydride it contained, well water, perfectly free from ammonia, was distilled, and the amount of gas dissolved in different portions of the distillate was ascertained.

	First fraction.	Middle fraction.	Last fraction.

Dissolved gases reduced to 0° and 760 mm. pressure.

Total volume,	2.661 vol. p. c.	1.312 vol. p. c.	1.047 vol. p. c.
Carbonic anhydride,	2.030 "	0.218 "	0.069 "
Oxygen,	0.198 "	0.358 "	0.341 "
Nitrogen (diff.)	0.433 "	0.738 "	0.637 "

In this case also the first fraction showed scarcely any action on lead, after remaining in contact with it for 24 hours. The middle and

* *J. pr. Chem.* [2], xxxvi, 317—340. Reprinted from *Jour. Chem. Soc.*, 1888, p. 225.

last fractions attacked it with considerable energy. The protecting influence of the first fractions must be considered as due to their containing a relatively large quantity of carbonic anhydride. Distilled water, which was vigorously boiled for some time and quickly cooled in contact with air, was found to contain 0.04 per cent. of its volume of carbonic anhydride, 0.236 per cent. of its volume of oxygen, and 0.514 per cent. of its volume of nitrogen. The rapid absorption of these gases explains the behavior of water so treated towards lead. Distilled water, quite free from carbonic anhydride but containing oxygen, scarcely acts on lead, but on exposure to the air the liquid becomes cloudy, owing to the formation of a white precipitate.

Samples of water containing different amounts of carbonic anhydride, but an invariable quantity of oxygen, behave very differently with lead. In one case, when the oxygen present was 0.35 per cent. of the volume of the liquid, and a saturated solution of carbonic anhydride was added until the water contained 0.14 per cent. of its volume, the lead was appreciably attacked. On increasing the carbonic anhydride to 0.6 vol. per cent., the attack became remarkably energetic. With 1 vol. per cent. the action was considerably weaker, and when the carbonic anhydride was increased to 1.5 vol. per cent. the lead was no longer visibly corroded. Water containing 2, 2.5, and 3 vols. per cent. of carbonic anhydride was equally inactive. Water containing carbonic anhydride but no oxygen is practically without action on lead, when atmospheric air is excluded. When strips of lead are immersed for eight days in pure distilled water, recently boiled and cooled out of contact with the air, they do not become tarnished. Before filtration, however, but not after, the water gives a considerable reaction with hydrogen sulphide. Pure water evidently attacks lead with formation of an oxide. Ordinary distilled water in which strips of lead were placed, and from which the air was excluded, contained a maximum quantity of lead at the end of three days, after which the lead was by degrees thrown out of solution. This is explained by supposing that water containing carbonic anhydride and oxygen in contact with lead forms lead carbonate, which dissolves in the excess of the gas; but as more lead oxide is formed, this carbonic anhydride is absorbed, and all the lead falls out of solution as lead carbonate. Distilled water, free from carbonic anhydride, to which minute quantities of ammonia have been added, attacks lead, but is without action on it if carbonic anhydride is present.

Lime water, through which a current of air, perfectly free from carbonic anhydride, was passed, at first slowly dissolved lead, but this was soon again thrown out of solution in the form of minute crystals. The solution attained a maximum after 13 hours, and then decreased. Sodium hydroxide solution behaved in a similar way. In the absence of oxygen, neither lime-water nor sodium hydroxide solution attacked lead. Lead tubing, buried in mortar, and kept in a dry room for a year suffered no change, but when the mortar was occasionally moistened with pure water, corrosion rapidly took place. When soapy water or an alkaline solution of lime was used instead of pure water, the decomposition-products consisted to some extent of red lead.

Ordinary distilled water, to which a small quantity of sodium carbonate was added, dissolved no lead, but the metal became slowly covered with a white, compact coating. When the water contained oxygen but no carbonic anhydride, lead was found in solution after a few hours. A trace of sodium hydrogen carbonate added to distilled water completely prevented the dissolution of lead, and the metal became covered with a protecting crust. Waters containing lead in solution were found to be freed from it by adding sodium carbonate. Pure lead carbonate is soluble in water containing carbonic anhydride; it is reprecipitated by boiling the solution or by adding hydrogen sodium carbonate to it. Evidently lead forms an acid carbonate, which is soluble in water but possesses little stability. Hydrogen calcium carbonate acts in precisely the same way as hydrogen sodium carbonate.

Polished strips of lead immersed in a saturated solution of pure calcium sulphate, containing oxygen, become covered with a hard, white coating, but no lead goes into solution. In the absence of oxygen, the metal remains perfectly bright. On placing lead covered with the white crust formed by long immersion in a solution of calcic sulphate, in pure distilled water, no lead went into solution except when a considerable quantity of carbonic anhydride was present. When a trace of hydrogen calcium carbonate was added to the solution, in no case was any lead dissolved. The coating is in all probability a basic sulphate of lead.

The presence of minute quantities of chlorides, nitrates, organic matter and ammonia in water, did not influence its behavior towards lead. This seems to depend on the presence of oxygen and carbonic

anhydride. Water containing much organic matter, and rich in carbonic anhydride, rapidly corrodes lead, but polished surfaces of the metal remain perfectly bright when immersed in pure solutions of organic compounds, such as starch and sugar, provided no carbonic anhydride is present.

BISMUTH IODIDE.

By B. S. GOTT, B.A., and M. M. PATTISON MUIR, M.A.

It is known that bismuth iodide, BiI_3 , may be prepared either by heating together bismuth and iodine in the ratio $\text{Bi} : 3\text{I}$, or by adding an aqueous solution of potassium iodide to a solution of bismuth nitrate in dilute nitric acid. The directions given by earlier experimenters for preparing this compound in the wet way are vague. We have recently made some experiments on the preparation of bismuth iodide, and also on the comparative stabilities towards water of this compound, according as the specimen is prepared in the dry or the wet way.

Preparation of Bismuth Iodide in the Wet Way.—Excess of a fairly concentrated aqueous solution of potassium iodide is added to bismuth nitrate dissolved in the smallest possible quantity of dilute nitric acid; BiI_3 is thus precipitated along with iodine. The precipitate is dissolved in as small a quantity as possible of concentrated aqueous hydriodic acid, and water is added until the greater part but not the whole of the bismuth is precipitated as brown BiI_3 . The solid matter is collected and dried for some time at 100° , whereby most of the free iodine is volatilized. The residue is then washed once or twice with absolute alcohol, and finally dried at 100° .

Some Properties of Bismuth Iodide.—The salt prepared as described above is somewhat soluble in absolute alcohol: 100 parts by weight of alcohol at 20° dissolve about $3\frac{1}{2}$ parts of the salt.

The sp. gr. of BiI_3 prepared in the dry way was found to be 5.64;
and the sp. gr. of BiI_3 prepared in the wet way to be 5.65 at $\frac{20^\circ}{20^\circ}$.

Specimens of the iodide prepared in both ways were treated with water in about the ratio $\text{BiI}_3 : 3000\text{H}_2\text{O}$, for different times and at different temperatures; the amount of decomposition to BiOI and HI

was determined by measuring the quantity of hydriodic acid produced at the expiration of fixed times. The results were as follows :

	BiI ₃ prepared in the dry way.	BiI ₃ prepared in the wet way.
Temperature=26°—		
After 30 minutes' action.....	17.5 p. c. decomposed	17.7 p. c. decomposed
“ 60 “ “	19.8 “	19.2 “
“ 150 “ “	24.4 “	23.9 “
Temperature 60—65°.		
After 30 minutes' action.....	22.5 “	20.1 “
“ 60 “ “	25.4 “	25.1 “
“ 150 “ “	30.7 “	33.9 “
Temperature=100°.		
After 30 minutes' action.....	22.75 “	23.6 “
“ 60 “ “	27.4 “	29.9 “
“ 150 “ “	35.1 “	35.4 “

There is therefore no appreciable difference between the rate of decomposition by water of the two specimens of bismuth iodide.—*Jour. Chem. Society*, 1888, p. 137.

REDUCING AND OXIDIZING PROPERTIES OF BACTERIA.¹

By W. HERAEUS.

The author prepared pure cultivations of the various bacteria (*Bacilli* and *Micrococci*), which occur in river water, in spring water and in soil, and also of the mould fungi (*Mucor* and *Aspergillus flavus*). Besides ash constituents, the nutrient liquids contained either ammonium carbonate or calcium nitrate or carbamide. There were found (besides those bacteria that would not grow in artificial liquids) two species which reduced nitric acid to nitrous acid and ammonia, and converted carbamide into ammonium carbamide; one species which made use of nitric acid without reducing it to nitrous acid, and which changed carbamide into ammonium salts; one species which behaved similarly with nitric acid, but did not change carbamide into ammonium compounds; one species which gave no indications of action on nitrogenous substances; one species which left nitric acid unaltered but changed carbamide into ammonium salts; and lastly two mould fungi which gave no indications of action on nitrogenous substances.

¹ *Bied. Centr.*, 1887, 783—784. Reprinted from *Jour. Chem. Soc.*, 1888, p. 313.

No species of bacteria were found which had an oxidizing action; but some micro-organisms were obtained from soil infusion and from putrefying urine which converted the nitrogenous matter of both ammoniacal and urine solutions, and of diluted meat-infusion into nitrous acid.

Further, an examination for oxidizing properties was made with various known species of bacteria; namely, the hay bacillus, *Micrococcus prodigiosus*, Finkler's bacteria; also with the pathogenic ones, namely, those of anthrax and typhus, *Tetragonus* and others. In solutions containing sugar and the ash constituents, almost all of them were devoid of any perceptible growth; whilst in urine diluted with four times its bulk of water, *Micrococcus prodigiosus*, root-shaped bacteria, the spirillum of cheese, Finkler's bacteria, those of cyphus and anthrax and *Staphylococcus citreus*, succeeded in forming nitrous acid. Hay bacillus, *Staphylococcus aureus*, and the bacteria of green pus and of pneumonia produced a thick turbidity but no nitrous acid. Brieger's bacteria had a feeble oxidizing action, and the experiments with Miller's bacteria gave a negative result.

RATE OF OXIDATION OF CARBON COMPOUNDS BY POTASSIUM PERMANGANATE.¹

BY DREYFUS.

When the oxidation of carbon compounds by potassium permanganate reaches its limit, the quantities of oxygen absorbed by equal weights of different compounds are not identical, but are of the same order of magnitude. When, however, the action is restrained, and the rate of oxidation is measured, the results vary widely with different compounds.

The reagents employed consist of a potassium permanganate solution equivalent to a solution of 0.1 gram of crystallized oxalic acid per litre, and a solution of indigocarmine, 10 cc. of which was equal to 5 cc. of the permanganate. A 1 per cent. solution of ethyl alcohol was used as a standard liquid, and all the other solutions were compared with it, the rate of oxidation of ethyl alcohol being taken as unity. 50 cc. of the alcohol solution was placed in a cylinder, and an equal volume of the solution to be examined in another cylinder, 25 drops of sulphuric acid was added to each, and after two minutes 10 cc. of

¹ *Compt. rend.*, CV, 523-525, reprinted from *Jour. Chem. Society*, 1888, p. 24.

potassium permanganate. The cylinders were allowed to remain in diffused light at about 15° , and 10 minutes after the permanganate had been added to the alcohol, the latter was run into 10 cc. of the indigocarmine solution until the color of the latter changed to yellow. Two minutes later, the other solution was treated in the same way. A simple calculation gives the quantity of oxygen absorbed by each substance under conditions which are strictly comparable, except that the weights of the substances are not identical. The second solution is diluted to a suitable extent, and after two or three comparative experiments, it is easy to calculate the amount of water to be added to the second substance, in order that the quantity of oxygen absorbed may be the same in both cylinders, and from this we get the weight p of the substance which will absorb as much oxygen in a given time as

1 gram of ethyl alcohol. If the two numbers 1 and $\frac{1}{p}$ are not actually

proportional to the rates of oxidation of equal weights of the two substances, they are of the same order, and may be regarded as coefficients of the relative rates of oxidation of the various compounds.

A large number of substances were examined, and the rates of oxidation vary from 0.2 in the case of saccharose to 10,000 in the case of pyrogallol; next in order to pyrogallol comes catechol, quinol, and resorcinol, with 5000, 3333, and 2000 respectively, phenol 786.0, α -naphthol 769.00, and β -naphthol 666.0. Hydrocarbons, sugars, alcohols of the ethyl series, and acids of the acetic and benzoic series, have much lower rates, varying from 1.0 to 6.0. Ether and alcohol show identical velocities.

Determinations of the rate of oxidation may be used to determine the class to which a substance belongs, and also to detect impurities in such compounds as acetone. The constitution of compounds affects the rate of oxidation more than their composition. Other conditions being the same, a saturated compound is less active than a non-saturated compound. Substances of the same chemical function show comparable rates of oxidation. The aldehyde function is more active than the alcoholic, and the phenolic function shows a very much greater activity. The rates of oxidation of isomerides are not the same. In the case of the dihydroxybenzenes and the toluidins, the ortho-derivative absorbs the most oxygen, and the meta-derivative the least, the para-derivative occupying an intermediate position.

ON THERAPEUTIC SUBSTITUTES FOR CHRYSAROBIN.¹

By C. LIEBERMANN.

In 1878 it was shown by me and Seidler (AM. JOUR. PHAR., 1879, p. 80), that the active principle of Goa powder is not chrysophanic acid, but *chrysarobin*, in which the quinone-group of chrysophanic acid is partly reduced, in consequence of which chrysarobin combines readily with oxygen, particularly when in alkaline solution, a behavior which is also observed with an alkaline solution of pyrogallie acid. At that time it was already pointed out that the remedial effects of Goa powder were probably not due to the chrysophanic acid produced from chrysarobin by oxidation; but most likely to the reducing action of the latter, to its strong affinity for oxygen. The effects of pure chrysophanic acid do not appear to have been studied, but its congener alizarin was, in 1878, shown by Jarisch to be of no value in psoriasis, while pyrogallol has a very decided effect. Jarisch was led to the use of the latter on account of its constitution, it being a polyatomic phenol; but he acknowledges the probability of its efficacy being mainly due to the affinity for oxygen.

The leuco-substances of many coloring matters closely resemble chrysarobin in the property of absorbing oxygen; but nearest to it in their constitution are the leuco-bodies of the anthraquinone coloring matters alizarin, flavopurpurin, anthrapurpurin, anthragallol and others. Granting the correctness of my view, it was to be expected that these leuco-bodies should possess remedial properties similar to those of chrysarobin. For therapeutic purposes only such deserved to be considered which may be readily prepared on a large scale, and among these alizarin and the two purpurins are obtainable at a relatively low price.

The reduction of these color-compounds was first effected by boiling with glacial acetic acid and granulated tin, with the successive addition of small quantities of fuming hydrochloric acid to effect a brisk evolution of hydrogen; a light yellowish solution is finally obtained, which is filtered, boiling hot, from the tin, and then precipitated with water; the reduction product is collected upon a filter, well washed with acidulated water, freed from the acid and dried upon earthen plates. This process requires some experience to avoid resinification of the product. On this account and because of the high price of the

¹ Abstract of a paper in *Berichte d. d. Chem. Ges.*, 1888, p. 447-452. J. M. M.

glacial acetic acid, it is better to effect the reduction by means of zinc dust and ammonia, which have been previously employed for similar purposes by Perger, Bollert and others; after boiling for fifteen minutes, the ammoniacal solution is filtered into hydrochloric acid, and the leuco-substances, after collecting, washing and drying, are thus obtained sufficiently pure for therapeutical use.

The first experiments were made with the reduction product of pure flavopurpurin, and after its efficacy was ascertained, the corresponding product of pure alizarin was prepared and found to be equally efficient; it does not, therefore, appear to be necessary for the purpose in view to keep these two coloring matters absolutely separate, and the subsequent experiments were made with commercial alizarin and purpurin.

The reduction product of alizarin had been prepared in 1881 by Römer, who named it desoxyalizarin; but neither this name, nor the collective name of anthranols, for such a group of compounds, seems quite appropriate, and it is proposed to call them *anthrarobins*, in view of their derivation from anthraquinol colors, and of their chemical and therapeutical relation to chrysarobin. The product obtained from commercial alizarin will be designated as *anthrarobin*, while those prepared from the commercial purpurins will be distinguished by prefixing the letter *p* or *f*.

Commercial anthrarobin is a yellowish white powder, permanent in the air, insoluble in water and dilute acids, but readily soluble with a brown yellow color in dilute solutions of alkalies and alkaline earths, the solutions in contact with oxygen passing through green and blue finally into alizarin violet. This change of color is best observed by agitation of the dilute solution in a test tube held over white paper; if from 0.25 to 0.5 gm. of the substance, together with some alkali solution, be thus agitated in a test tube closed by the thumb, a diminution of pressure in the tube will be observed.

Anthrarobin dissolves with difficulty in benzol and chloroform; but in glacial acetic acid and in alcohol it is much more soluble than chrysarobin. It required 5 parts of 90 per cent. alcohol for solution in the cold, the liquid being of a brown yellow color; hot alcohol dissolves it instantly. Long continued boiling causes decomposition; but the cold alcoholic solution may, in a well-corked vial, be kept for weeks with but slight alteration. The compound is also soluble in glycerin, and the alcoholic solution may be diluted with glycerin with-

out precipitation taking place. Commercial anthrarobin contains a trace of zinc, but the ash amounts only to one-third per cent.

Dr. G. Behrend has used anthrarobin for herpes tonsurans, pityriasis versicolor, eczema marginatum and psoriasis, effecting cures in 14 cases. He regards it as somewhat less efficacious than chrysarobin, but more so than pyrogallol; it colors the skin slightly brown, but does not produce inflammation, and may be employed in the face; the stains on clothes are removed with the aid of soap and soda.

The new remedy has also been used by Professor Dr. Köbner with favorable results in psoriasis, pityriasis and papulous syphilis.

PHYSIOLOGICAL ACTION OF SANTONIN AND ITS DERIVATIVES.¹

BY F. COPPOLA.

One per cent. solutions of santonin, of photosantonin, and of isophotosantonin in olive oil, at 38°, do not kill the *ascarides lumbricoidi* of the pig. Whilst, however, the two first-named substances increase the movements of the animal and cause convulsions, with isophotosantonin the reverse is the case. The other santonin-derivatives examined resemble the two first in their action on the worms. It was also found that doses of 1.25 grams of santonin daily administered to the pig did not kill the worms. The action of santonin on worms resembles its action on vertebrate animals. In order to lessen the toxic effects of the drug on the animal to which it is given it is advisable to use santoninoxime (Cannizzaro, *Rend. R. Acc. Lincei*, 1885, 703), which is insoluble in water, easily soluble in oils and fats, but not in organic acids, nor is it acted on by the gastric juice. The increased activity of the worms leads to increased peristaltic action of the intestine, which thus voids them. In the urine, santoninoxime passes out slowly as santonin; it is less poisonous than santonin, but is equally efficacious in its action on the parasites.

Experiments were also performed in order to see whether the photosantonin-derivatives differed in their action from that of santonin, and also to discover if any relation existed between physiological action and the power of solutions of these compounds to rotate the plane of

¹ *Chem. Centr.*, 1887, 1206, 1208—1209, 1301—1302; from *Rend. R. Acc. Lincei* [4], iii, 513—521, 573—578. Reprinted from *Jour. Chem. Soc.*, 1888, p. 310.

polarized light. *Photosantonin acid*, $C_{15}H_{22}O_5$, has a narcotic action on frogs, doses of 0.02 to 0.03 gram abolishing first voluntary movement, then the movements of respiration; the heart and reflexes are but little affected: doses of 0.04—0.06 gram first diminish, and then abolish reflexes, and stop the heart in diastole. In vertebrate animals the action is similar, except that the reflexes are not affected. *Photosantonin*, $C_{17}H_{24}O_4$, acts in the same way, but on account of its smaller solubility the effects are not so marked. *Santonin*, $C_{15}H_{18}O_3$, itself, and sodium santonate cause as their chief symptoms convulsions; it seems then that the action of light is to modify the physiological action of these compounds on the nervous system; the action on the respiratory and circulatory systems is, however, the same. *Santonin acid*, $C_{15}H_{20}O_4$, in doses of 0.03 gram, causes no effect in frogs; 0.04 to 0.05 gram produces narcosis, abolishes respiratory movements, but does not lessen reflexes. Larger doses affect the reflexes and kill the animal; if the dose is not lethal, the animal experiences clonic convulsions like those produced by santonin, as the narcosis passes off. In a rabbit of 1 kilo. body-weight, doses of 1 to 1.5 gram applied hypodermically have no effect: 2 to 3 grams caused sleep in $\frac{1}{2}$ to 1 hour, and, like santonin, epileptic convulsions. There is no action on the circulation, except with lethal doses, which stop the heart in diastole: atropine does not antagonize this action; this acid thus produces the effect of santonin combined with that of the photo-compounds, both narcosis and convulsions. Santonic and isosantonin acids act like photosantonin acid. Isophotosantonin, $C_{17}H_{24}O_4$, is no hypnotic, but easily causes strong convulsions. Isophotosantonin acid, $C_{15}H_{22(4)}O_5$, acts similarly, but is weaker. The derivatives of santonin that cause convulsions do so by their action on the medulla, not on the spinal cord. The photo-derivatives contain, like santonin, a closed naphthalene nucleus, and the differences in their constitution are to be found in the side-chains. There was found to be no connection between physiological action and the direction or amount of rotation of the plane of polarized light.

Nutrient Enemata—Physicians will generally indorse the conclusions of Professor Ewald, of Berlin, who has recently made some experiments with different nutrient enemata, and has found that enemata of eggs were of decided service, and that they were as efficient and satisfactory without being peptonized as when they were subjected to this process.—*Louisv. Med. Herald*, April, 1888.

NOTES ON GAMBIER.*

The shrub *Uncaria Gambier* was first described by Rumphius, but attention to its practical application originated with Dr. Campbell, one of the earliest medical officers stationed at Bencoolen. This gentleman made a study of the useful plants of his district, and was very anxious that a trial of the tanning powers of gambier should be made. After mentioning that gambier was chewed by the Malays with *pinang* and *siren*, Dr. Campbell thus describes the methods of preparing it for consumption. "The young shoots and leaves are shred and bruised in water for some hours until a feculum is deposited; this is inspissated in the sun to the consistence of a paste, is thrown into moulds of a circular form, and it is in this state the gambier is brought to market." Substitute boiling in an iron pan for inspissation in the sun, and there is not any really great difference between the primitive principle described by Dr. Campbell, and that of to-day, by means of which gambier is turned out in thousands of tons for shipment to Europe and America.

Before going into the question of manufacture, however, a few lines should be devoted to the growth and cultivation of gambier. The main points in gambier planting which are so attractive to Chinamen, are the great rapidity with which they get a crop out of the ground, and the small original outlay which is required. The history of the majority of these plantations will show that pepper has been planted out of gambier profits. Of course pepper is a great hit when all goes well, but it wants a considerable capital to start with, and it takes some years before it gets into anything like full bearing. It is altogether a plant of slower growth and longer life than gambier as it is now cropped. The leaf of the young gambier plant is thick and fleshy, and yields a large quantity of extract; but as the shrub ages the leaves become thinner and more fibrous in texture and lose their characteristic fleshiness. In a little over ten years a plantation is almost valueless, and as a general rule is abandoned within fifteen years. This result is certainly due to the savage treatment to which the shrub is subjected. The Chinaman commences cropping his gambier about eighteen months after he has put it into the ground, after which he will go on cropping it two, three, or even four times a year, being guided more by financial

*From the *Straits Times*. Reprinted from the *Phar. Journ. and Trans.*, April 14, 1888, p. 369.

considerations or market rates than by the fitness of his plantation for the cropping. The shrubs are cut down with no sparing hand ; leaves, shoots, and twigs are all lopped off by the Chinaman's knife, and the plant is well nigh reduced to the condition of a mop-stick and left with barely sufficient leafage to enable it to carry on its existence. No attempt is made to manure the plantation. The soil, deprived of its natural shade, is left either to be burned into the consistency of a brick, or else the whole place is overrun with *lalang*. The only wonder is that a gambier plantation is not used up sooner. It is quite an error to suppose that the plant exhausts the soil like indigo. With similar treatment gambier would last as long as pepper. The spent leaves from the gambier pans are said to be very good for pepper ; these leaves are quite exhausted by the time they leave the *bangsal*, and cannot possibly stimulate or nourish the vines, but they form a useful shade for the roots, and they are very serviceable in keeping off both white and red ants ; the bitter principle of the spent leaves repels these destructive insects which are otherwise attracted to the vines when they blossom.

The manufacture of gambier is as barbarous as its cultivation. The green leaves and shoots are roughly chopped with a *parang* and thrown into a *qualli*, which is then filled up with water ; the furnace below the iron pan is of the roughest possible construction, and consumes an immense quantity of firewood. While the leaves are boiling they are incessantly prodded with a sort of wooden trident in order to break them up and assist the process of maceration. When the amount of "gutta" which has exuded from the leaves causes the liquor to be thick and syrupy, the leaves are taken out and placed in a wooden trough which overhangs the pan at such an angle that the liquor drains freely back into the pan from the steaming mass in the trough. The liquor in the *qualli* is then ladled into small and shallow wooden tubs ; the leaves in the trough are once more swept into the pan and reboiled, after which they are taken out and thrown outside to be afterwards carried off to the pepper garden. The liquor left in the *qualli* from the second boiling is too weak to be converted into gambier, but is an excellent extract in which to boil up the next lot of green leaves.

As soon as the extract in the small wooden tubs already spoken of is sufficiently cool to allow of the hand being placed in it, a very curious process of agitation is adopted by the Chinese, which it is difficult to

clearly describe. The coolie squats before the tub, and plunges his half-closed hand into its semi-fluid contents, and in the hollow thus formed by his hand he incessantly works up and down a piece of light wood shaped like an elongated dicebox. The immediate effect of this treatment is to cause the gambier extract to thicken. In fact it sets up a process of crystallization; the extract assumes a concrete form and becomes *gambier*. When it is quite cool it is turned out from the tub as from a mould and cubed with a knife, which, as a rule, is made out of the iron hooping of a Manchester bale. The cubes are then put on coarse bamboo trays with wide meshes, the trays are placed in rudely constructed racks over the *dapur* and should be left there four or five days to get smoke-dried. The cubes at the end of this time will have thrown off an immense percentage of water, and have become greatly reduced in size. It is then packed in mats and sent off to one of the gambier houses fronting on Boat Quay, each of which possesses a capacious well of moderately dirty water.

It is easy to distinguish good gambier. If sound ripe leaves are boiled for a sufficient number of hours, and if the cubes are made not too large and are properly smoke-dried, then the gambier will be delivered into the godown in a hard compact mass weighing as near fifty catties as possible. There is some difficulty in stripping off the mat; the cubes are distinct and are of a good brownish-black color externally, and when broken will exhibit a deep mahogany red with an occasional streak of dark-yellow; there is a total absence of steaminess about such gambier, and when it has been put through the press, the pools of water near the bed plate and pump will not be covered next morning with a milky-white surface.

In the ordinary run of gambier which merchants are now content to receive, there are no traces of cubing, and when cubes are to be discerned they are of an extraordinary size, the color is of an unclean white to a dirty pale yellow, and the mass frequently steams. There is a farce gone through at the press of "rejecting" bad stuff, which is worse than useless, because it costs money, the "rejections" are all worked over again with mat scrapings, and are rushed through the godown with unfailing success. Any one who will take the trouble to walk along Boat Quay, between Elgin bridge and Coleman bridge, will see "rejections" being worked over by the ton; not a catty of this beastly stuff is lost by the Chinese. "Rejections," of which our shipments are now so largely composed, are simply nothing much more than

masses of putrescent boiled vegetable matter; it frequently shows large patches of a black or dirty blue color, it cannot hold together, but drops to pieces when handled, and often has a sour fetid smell. The fact is that the Chinamen, finding that anything will be accepted, boil down leaves which may be either too old or too young, mixed up with useless shoots and twigs; the *bangsal* proprietors save as much firewood as they possibly can, it being one of their principal items of expenditure; the extract is not sufficiently boiled and the crude stuff will not crystallize properly. It is doubtful whether it can stand a few days smoke-drying, but it is not put to this test, however, for after a very brief course of *asap*, it is bundled up in mats and delivered in all haste to the merchant, who accepts it with results which must be best known to himself.

A few words as to the general chemistry of gambier may be interesting. Roughly speaking, good gambier may be said to contain between 40 per cent. and 50 per cent. of tannic acid,¹ the other chief ingredient of gambier being a soluble gum: its action upon hides is to precipitate all their fatty and fleshy matter, leaving nothing but the imputrescible substance, that is to say, leather. Notwithstanding this precipitation, the hides take up so much gambier as to gain in weight by the process.

There is no space in this rapid sketch for any details about the working of the "hongkek," or of adulteration of gambier with foreign matter, but the overloading of gambier with water, combined with what can only be called the fraudulent method of its preparation, constitute adulteration of the worst and most destructive type.

REPORT ON ACETIC EXTRACT OF IPECACUANHA.¹

BY I. W. THOMSON AND WILLIAM DUNCAN.

The introduction of the new process for making ipecacuanha wine had, the authors said, been productive of a demand for a ready-made extract. The new process, although an advance on that of the 1867 Pharmacopœia, was so troublesome that many preferred to buy the acetic extract rather than make it. They had published a process in *The Chemist and Druggist*, June 12, 1886, in which they recom-

¹? Catechin.—Ed. Pharm. Journ.

¹Abstract of a paper read before the North British Branch of the Pharmaceutical Society; reprinted from *The Chemist and Druggist*, March 31, 1888, p. 420.

mended the root to be macerated in the acetic acid for twenty-four hours, then transferred to a water-bath and the free acetic acid driven off, the acetified root then to be macerated in the sherry. They claimed that this process gives little trouble. The minimum of heating is required, and the product is in every way equal to that prepared by the pharmacopœial method.

Since the publication of their process they had examined several samples of the acetic extract as found in the market. From published statements it appears that *ipecacuanha* yields on an average 18 to 22 per cent. of acetic extract, while the root yields 1.6 to 1.7 per cent. of emetine. The acetic extract should, therefore, contain from 8 to 8.5 per cent. of emetine, taking the average yield of extract to be 20 per cent. Nine samples had been examined; seven were in powder and two lumpy. Three had been standardized, two with a silicate, apparently kaolin, and one with what appeared to be finely powdered exhausted root. No sample was entirely soluble in water, proof or rectified spirit; all were slightly acid. The yield of ash varied from 10 to 39 per cent., 10 per cent. being the natural yield. When volumetrically estimated by Mayer's reagent they gave the following results:—A=4.72, B=5.19, C=6.1, D=7.0, E=6.2, F=7.1, G=8.0, H=5.18, I=5.7 per cent. of emetine.

It therefore appeared that, however variable the 1867 wine might be in alkaloidal value, the 1886 preparation quite rivals it when made from commercial acetic extracts. That it is possible to make an extract containing the full amount of alkaloid was shown by the fact that one of the samples examined contained within .5 per cent. of the maximum that could be obtained. To remedy this discrepancy the authors recommended that the acetic extract should be standardized to contain at least 6 per cent. of alkaloid, or that their process of digesting the acetified root be tried, as it practically yields the same result.

Antipyrin Hæmostatic.—The experience of Dr. W. M. Powell, of Albany, Texas, in two cases, confirms the conclusions of Dr. Cosati as follows: "Antipyrin is a powerful hæmostatic; superior to iron perchloride, because it leaves the wound perfectly clean, and even superior to ergotin, because it is not toxic in ordinary doses; it is antiseptic as well as antipyretic, and its action is very prompt." A four-per-cent. solution is about the best strength to apply to bleeding surfaces.—*Virg. Med. Monthly*, April, 1888.

ON GUARANA.

BY DR. H. H. RUSBY.

From a lecture at the Philadelphia College of Pharmacy, December 1, 1887,
stenographically reported by Dr. C. H. Morgan.

The home of the Guarana is a very different region from that of the coca, although it forms part of the same great region. The great forest plains of Brazil, if they were grass-covered would present an appearance very similar to that of our own prairies, except that over the greater portion the surface of the country is so level that there is little to separate the rivers. During part of the year very little travelling occurs in this country. The rivers, which unite to form the Madeira, in this section at certain seasons of the year all unite to form one vast lake and a greater part of the country is under water. It is no uncommon occurrence to see the water flowing up streams as the level of a stream is raised higher than that of the other which ordinarily flows into it, by means of additions higher up. The smaller streams have an almost imperceptible current. They are extremely deep and narrow. I have parted the brush from the mouth of a stream which was narrow, but which had a depth of fifteen or twenty feet. The banks of this stream would be so covered with vines that you could hardly land. You could hardly penetrate for a single foot. Progress is prevented by the rushes, the driftwood and the brush. After this region is passed there is a belt of peculiar trees called Ambaibas, about the size of our ordinary forests of maple, poplar, and small oaks, yet it is noticeable only as a fringe to the neighboring frowning forest which towers up behind it. Vines fall down over the trees of smaller growth, covering them like a mantle, and in many places falling into the water. Back of that occurs the cane brake of various species of bamboo three miles in width, and then you reach the forest proper. Here there are no such obstacles as you find in the mountains. The travel is not so difficult. There will be long stretches where we can thread our way with success, then we come again to the jungle where the tangle commences. Once there we have to force our way; cutting our way is not practicable, for every time you cut something else falls in your way. There is nothing to do but to place your shoulders against the mass and simply push your way through. Among this cane brake run several species of deer, and a great number of tapirs, and it is the home of the prowling jaguar, which lies in wait for other animals, as does the alligator. Here, too, we are liable to encounter enormous anacondas.

Once you get to an instalment of the forest proper, instead of having bright butterflies and singing birds, you reach a region which is more like a region of death. The surface of the earth is covered, it is true, with vegetable growth, but it is at the summit of the trees one hundred and fifty feet above us. If you could look on the surface of this forest it would be a mass of green, but you are below and it is like a subterranean region with only a dark twilight, and it is all silent like the grave. There is a damp earthy smell to the air, which is never penetrated with the rays of the sun. The trees are often as thick as in our own forests. We can only imagine what scientific treasures we could secure were this upper region accessible to us. After all, the region is richer in vegetable growth than the mountain region, but it is so far above us we can't see it.

Such is the home of the Guarana. This is one of the smallest vines which border the water courses above described. Unlike coca, its origin is easily apprehended. The Sapindaceæ family is largely represented in Brazil, especially by three genera of climbing vines. I have no specimens of this with me. It is found wild in many parts of this region. The stem appears like three cylindrical pieces amalgamated into a triangular stem. Its branches are long and slender, climbing by their tendrils.

With the wild plant we have nothing to do. The collection of the drug from the wild plant in this region presents insuperable difficulty. The plant has long been cultivated in the region of the lower Madeira. Guarana is cultivated in this district about here (indicating), it is also a little further south and perhaps a little east. Here it presents a very different aspect from what it does in the wild state. It is planted out just as a vineyard is planted, except that it is planted wider apart and trained to poles the same as hops. The plant is kept within bounds by pruning. The ripening of the seeds is shown by the opening of the pods. Immediately upon this the fruit is gathered to prevent the inevitable loss which would occur from its falling. This fruit resembles the hickory nut. It is contained in a husk, which husk consists of three instead of four parts. From these the seeds are shelled out by hand as hickory nuts are. First they are washed free from a phlegmy substance and then subjected to a roasting process of six hours' duration, which loosens from them a papery shell which is removed by placing them in sacks, and beating them with clubs. The best varieties of Guarana are those in which the seeds have not been very finely broken. A small amount of water is then added, just sufficient to form a mass. It is kneaded by hand into a mass of the consistency of dough. I have been informed that the common belief in this country is that other materials are added to this mass by which it is adulterated. The fact is that other things are not generally so added. A large building is then utilized for the drying purpose. Upon the upper floors of this building this material is spread out and subjected to a slow fire of fuel, selected with a view of making no smoke, the object being to keep the temperature equable, maintaining at the same time sufficient heat. It is exposed in this way for a certain number of weeks when it is ready for the market. Great experience is necessary to carry on this process. This is the manner in which it is prepared in its own home. It is used there by the natives, a portion being grated off with a large file, and it is served in a glass full of cold water. Its effects are very refreshing, but its excessive use is deleterious. It contains two or three times the quantity of caffeine that coffee does, producing a happy effect on the nervous system, but if used in excess bringing on trembling and a palsied condition of the limbs.

Ichthyol in Rheumatism.—Doubelir reports that in the military hospitals of Moscow ichthyol has been given in eight cases of articular rheumatism, six of which were acute and two were chronic. The result was diminished pain, but continued swelling. The remedy may be given in pills or capsules containing one and a half to three grains each. Of these from six to twelve of the first and from three to six of the second may be given in twenty-four hours.—*L'Union Méd.; Méd. News*, Dec. 10th, 1887.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, April 17, 1888.

The meeting was called to order and Mr. A. Robbins was asked to preside. The minutes of the last meeting were read and approved. A paper upon *pyroxylin* by G. M. Beringer, Ph. G., was read and referred to the Committee on Publication. Samples of the nitrated wood pulp were exhibited both in an amorphous state and rolled in sheets under only moderate pressure. The process for obtaining wood pulp was enquired into; and in reply it was stated that in some cases, billets of wood were placed in a close cylinder and super-heated steam passed over them till the wood was completely disintegrated, when it is then treated with caustic soda solution. Other makers make the wood into shreds like wood packing and some into shavings; all of these forms after the treatment with alkaline solutions are thoroughly washed and pressed; this yields the wood pulp of the paper maker.

Professor Remington called attention to a long iron cylinder which was on the table and which he explained as one of the containers of *liquid carbonic acid*, now supplied by a company termed the American Carbonate Company. Their process is to prepare the gas by treating only pure carbonate of lime washing the gas and compressing it into a liquid condition in the cylinders such as exhibited. Its uses are so manifold that it would seem to be a most valuable application of science to the arts in many directions, as for preparing carbonic acid water, for bags for divers to raise heavy weights in water, to float sinking vessels, and for many other purposes. As mixtures of air with twenty per cent. of carbonic acid will not support combustion, carbonic acid is quite valuable as a fire extinguisher, and may be conducted by means of pipes with outlets in various parts of a building. Enquiry was made as to the composition of the solution used in *hand grenades* and it was said they were largely carbonated solutions of various salts. Ammonia is also quite effectual in extinguishing fires as was shown in the case of a fire occurring in the cellar of a drug house when the heat burst two carboys of ammonia water which extinguished the fire. The preservation of fresh meats has also been effected by means of carbonic acid gas for several weeks at a time. The many uses to which the gas in this portable shape can be applied render it probable that quite a revolution in some industries may take place.

The question of the strength of *nitric acid* needful in preparing *pyroxylin* led to some discussion as to the reason that the manufacturing chemists did not make an acid of 43° B. for the trade. Professor Remington stated that it was for prudential reasons entirely; that it was unsafe to transport an acid over 38° in the usual package, and that it had been found that the usual materials employed for packing would lead to conflagrations if brought into contact with acid stronger than 38°.

The query was made whether *methylic alcohol* could be used as a fuel for lamps without suffering from the very unpleasant odor that belongs to it in its usual form; the reply was that it had been found unsuited.

An enquiry was made whether an apothecary was liable to the United States Government liquor tax if he sold spirituous liquors on physicians' prescrip-

tions; the answer was that if sold at all a license must issue first, as there is no authority given to any one to set aside that law.

On motion adjourned.

T. S. WIEGAND,
Registrar.

EDITORIAL DEPARTMENT.

The Seventh International Pharmaceutical Congress.—At the sixth International Pharmaceutical Congress held in Brussels in 1885, the city of Milan was selected for holding the Seventh Congress in 1888 (see *Am. Jour. Phar.* 1885, p. 528). During the past month we have learned from European journals, that recently the *Associazione Farmaceutica Lombarda* have inaugurated the preliminary steps for holding the Congress during the month of September next. The various pharmaceutical and kindred associations of Italy have been addressed with the view of securing their active cooperation, and it is confidently expected that within the comparatively limited time remaining the arrangements for a successful meeting will be completed.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Beginnings in Pharmacy.—An introductory treatise on the practical manipulation of drugs and the various processes employed in the preparation of medicines, in eight chapters, with numerous formulas. By R. Rother, graduate of the University of Michigan, etc., Detroit. William Graham Printing Co. 1888. 8vo. Pp. 342. Price, \$1.75.

In 1853, a committee appointed by the American Pharmaceutical Association, addressed a series of questions to leading apothecaries in different parts of the United States, of which the third ran thus: "Is any personal instruction extended to apprentices beyond the practical details of the shop, as regards chemistry, materia medica, and botany?" The answers received were summarized, we think by the later Professor Procter, and published in the Proceedings for 1854, pp. 31 and 32. Every one of these answers states either that no personal instruction, or very little personal scientific instruction is given to apprentices; and it is further stated or intimated that but few are qualified to give it. This non-qualification for giving instructions does not necessarily infer ignorance; for a person may possess a good and sound knowledge, without being able to impart it to others, or, in other words, without having the faculty of *teaching*; moreover the demands of business upon the time and energy of the employer are frequently such as to render it impossible for him to give attention to it. To such the book before us will be a most welcome one, as it will enable the employer to lead his apprentices to proper methods for acquiring knowledge; and apprentices will value it for the same reason, the more so as by using it properly

they will be led to habits of observation and care. The book teaches the *handling* of the drugs and implements; that is to say, in using the book these articles are to be taken up and, with the aid of the book, examined in various directions, such as the place where it is kept, the container used, the striking properties of the article, the proper way of weighing and wrapping it, its origin, uses, etc., etc., which form the scope of the plain and practical lessons.

The book is divided into eight chapters, each with a suitable number of subdivisions. These chapters are headed, "The handling" of solids; of liquids; of mixed solids and liquids; of heated solids and liquids; of gases and vapors; of incompatible solids, liquids, and gases; and of weights and measures; the eighth chapter being entitled, "The right use of technical terms." The work is practical, useful, and correct, well adapted for the tyro, and admirably fitted for a guide in "the beginnings in pharmacy."

Skeleton Notes Upon Inorganic Chemistry. Part I. Non-metallic elements.

By P. de P. Ricketts, Ph. D., Professor of Assaying in the School of Mines, Columbia College, N. Y. City, and S. H. Russell, E. M. New York: John Wiley & Sons, 1887. Price, \$1.50.

These skeleton notes are intended to aid the beginner in following lectures on chemistry, and, therefore, present the merest outline, arranged in such a manner and copiously interleaved, so that the student may supply additional matter in his own way. The non-metallic elements are arranged alphabetically. The shape and size of the book render it convenient for a note book.

Toilet Medicine: a popular scientific manual on the correction of bodily defects, and the improvement and preservation of personal appearance; together with formulæ for all the preparations recommended. Second edition. By Edwin Wooten, B. Sc. etc. New York: J. H. Vail & Co., 1888. 12 mo., pp. 114. Price in cloth, \$1.00.

As explained in the title, this is not a work on toilet articles, but is intended to assist in the removal of certain bodily imperfections which do not require the services of a surgeon. Some such "imperfections" are imaginary, as for instance the gray color assumed by the hair with advancing years; but others like bruises, burns, corns, frost bites, etc., are fairly entitled to treatment with toilet medicines. After some general remarks on the treatment of the person in health, the different affections with their remedies are considered and arranged according to the different organs and parts of the body, followed by a chapter on dress and eating and drinking. In all cases the causes of the affections are explained, and formulas are given for mostly simple external applications, which appear to have been judiciously selected, rendering the little work practical and useful. In some cases the directions, particularly for laymen, should be more explicit; thus page 86, it is recommended in cases of poisoning to send for the doctor, meanwhile for *strong acids* to give, among other things, *ammonia*. The daily use of *atropine* as a wash, without the supervision of a physician, is a dangerous practice, even though the solution contain only one grain to the pint (p. 44).

Handbuch der praktischen Pharmacie für Apotheker, Drogisten, Aerzte und Medicinal-Beamte. Bearbeitet von Prof. Dr. H. Beckurts und Dr. B. Hirsch. Stuttgart: Ferdinand Enke, 1887. 6 und 7 Lieferung, pp. 481—733.

Handbook of practical pharmacy, for apothecaries, druggists, physicians and medical officers.

The two fascicles before us complete the first volume of this work, which we have extendedly noticed in the July and October numbers, last year, where its scope and arrangement were explained, and its usefulness and value commented upon. The medicinal and other preparations, following in alphabetical order of their Latin titles, have reached *extractum valerianæ* with which the volume closes.

The Pennsylvania State College Agricultural Experiment Station. Bulletins Nos. 1 and 2.

The Agricultural Experiment Station of the Pennsylvania State College, at State College, Centre Co., was established by vote of the trustees, June 30th, 1887, in accordance with the provisions of the act of Congress, known as the Hatch act, approved March 3d, 1887, thereby greatly enlarging the experimental work carried on at the College since its foundation. The bulletins contain a historical sketch of the agricultural experiments conducted at the College during the thirty years commencing with 1857; and reports upon the composition and development of soiling crops, and upon field experiments with phosphates.

Duality of the Brain, a theory of mind-reading and slate-writing. By R. E. Wood, M. D., Professor of Physiology and Hygiene in the Southern Medical College, Atlanta, Ga.

A very interesting essay, the drift of which is indicated by its title, and which will be read with profit also by others than medical men.

The Lomb Prize Essays.—In the July number of last year (page 381) we noticed the publication of four essays relating to subjects of hygiene, and published under the above general title by the American Public Health Association, by whom they are sold at a mere nominal price with the view of giving them the widest possible circulation. For the current year Mr. Henry Lomb offers through the same association two prizes of \$500 and \$200, for the two best essays on "practical sanitary and economic cooking adapted to persons of moderate and small means." The awards will be announced at the next meeting of the American Public Health Association by the following judges: Prof. Charles A. Lindsley, New Haven, Conn., Prof. George H. Rohé, Baltimore, Md., Prof. Victor C. Vaughan, Ann Arbor, Mich., Mrs. B. H. Richards, Boston, Mass., Miss Emma C. G. Polson, New Haven, Conn.

The arrangement of the essay will be left to the discretion of the author. They are, however, expected to cover, in the broadest and most specific manner, methods of cooking as well as carefully prepared receipts, for three classes—(1) those of moderate means; (2) those of small means; (3) those who may be called poor. For each one of these classes, receipts for three meals a day for several days in succession should be given, each meal to meet the requirements of the body, and to vary as much as possible from day to day. Formulas for at least twelve dinners, to be carried to the place of work, and mostly eaten cold, are to be given. Healthfulness, practical arrangement, low

cost, and palatableness should be combined considerations. The object of this work is for the information of the housewife, to whose requirements the average cook-book is ill adapted, as well as to bring to her attention healthful and economic methods and receipts.

All essays written for the above prizes must be in the hands of the Secretary, Dr. Irving A. Watson, Concord, N. H., on or before Sept. 15, 1888. Each essay must bear a motto, and have accompanying it a securely sealed envelope containing the author's name and address, with the same motto upon the outside of the envelope.

After the prize essays have been determined upon, the envelopes bearing the mottos corresponding to the prize essays will be opened, and the awards made to the persons whose names are found within them. The remaining envelopes, unless the corresponding essays are reclaimed by authors or their representatives within thirty days after publication of the awards, will be destroyed, unopened, by the Secretary.

It is intended that the above essays shall be essentially American in their character and application, and this will be considered by the judges as an especial merit.

Competition is open to authors of any nationality, but all the papers must be in the English language.

OBITUARY.

Jules Emile Planchon died early in April, at Montpellier, where for many years he held the chair of botany and pharmacognosy (natural history of medicaments) in the medical school and in the école de pharmacy of that city; he was also director of the botanical garden connected with these institutions.

Daniel C. Robbins died suddenly of heart disease, in Brooklyn, April 15th, aged 73 years. He was a member of the firm of McKesson & Robbins, in New York, and for many years prepared annually, for the Chamber of Commerce for that State, the Review of the Drug Trade of New York, the last one published being for the year 1886.

Joseph T. Brown died in Boston, April 23rd, aged 78 years. He was the last survivor of four brothers, all apothecaries, who carried on business on Washington street, Boston, for a longer or shorter period during the last sixty years.

William N. K. Boileau, Ph. G., Class 1876, died in Philadelphia, March 4th. He was born at Eddington, Bucks county, Pennsylvania, and at the time of his death was a student at the *Medico-chirurgical* College expecting to graduate this spring.

John Wm. Hugo Oppermann, Ph. G., Class 1874, died of bloodpoisoning, April 19th, aged 37 years; for a number of years he had been in business at 8th and Oxford streets.

Kinsey Durell, a senior student of the Philadelphia College of Pharmacy, died at his father's residence in Chester, March 2.